



FRIDAY, OCTOBER 8.

## The Old Columbia Railroad Bridge.

The Philadelphia Ledger of recent date gives the following interesting history of the old Columbia Railroad bridge over the Schuylkill River, the oldest railroad bridge now standing in the United States, which is soon to be replaced by a new iron bridge:

Last month Judge Butler, of the United States District Court, granted authority to the Receivers of the Philadelphia & Reading Railroad Co. to apply from their receipts a sufficient sum of money to replace the bridge across the Schuylkill, near Peter's Island. The Receivers have proceeded promptly, and obtained contracts for an iron bridge from the Phoenix Iron Co., which will go on with the work without delay.

Thus will be removed from the Schuylkill River the oldest bridge which crosses it within the city of Philadelphia, a structure that was fashioned more than 50 years ago, and according to the usual manner of wooden bridge building at that period, which, indeed, had not altered from the styles adopted in the earlier constructions common in the beginning of the present century. When the Market street bridge was finished in 1804 it was the intention that it should remain open, free to the action of the sun and air, exposed as well to rain and storm. Judge Richard Peters, a prominent stockholder of the company which erected that bridge, was the author of the plan of covering it at the sides and surmounting it with a roof. It was his opinion that if the timbers were left open and the roadway exposed to the alternate action of storms and rain, with sun and air, would lead to conditions that would soon tend to decay and destruction. So the sides were boarded up, with the exception of spaces for windows, a long roof was placed over it, and the bridge was nothing more than a wooden tunnel, leading from one side of the river to the other. The railroad bridge was constructed faithfully according to the Market street bridge pattern, and for many years has been the only exponent of that style in this vicinity.

The undertaking to bridge the Schuylkill at this point was considered one of great magnitude, requiring large expenditure of money and involving new problems in engineering. It could only have been undertaken by some great corporation with heavy capital and command of money, if such could have been in existence half a century ago. Efforts to create such a corporation to build a railroad from Columbia, on the Susquehanna River, to Philadelphia had been made for some years previously, but were unsuccessful, on account of insufficient subscriptions. The feeling throughout the state in favor of internal improvements which would place the West in easy access with the East and then facilitate an exchange of products had been increasing, so that the Legislature became a potent accessory to the development of great plans. From 1822, when John Stevens of New Jersey, petitioned the Legislature of Pennsylvania for authority to incorporate the Pennsylvania Railroad Co., a measure perfected by act of Assembly in the succeeding year, until 1828—another company called the Lancaster, Columbia & Philadelphia Railroad Co., having been chartered in the meantime—the matter remained before the people. At length, by the act of March 4, 1828, the Legislature authorized the building of a railroad between Columbia and Philadelphia, at the expense of the commonwealth and for the comfort of the people. Canal Commissioners chosen to carry out the grand scheme for internal improvement undertook the work.

The preliminary surveys took place in that year. A satisfactory location for the road in the neighborhood of the city was prevented by differences of opinion among the engineers, as well as the conflict of interests between the city proper and the adjoining districts of the county of Philadelphia. Surveys had demonstrated that it was perfectly practicable to bring the railroad to the Schuylkill by a divergence from the main line near the Wayne Tavern on the Lancaster road, leading by a circuit to a point near the west end of Market Street bridge. Spring Garden, Northern Liberties and Kensington were opposed to this plan. They wanted the railroad to terminate within their boundaries or adjacent thereto. Practically they succeeded, and that is the reason why Major John Wilson, the Chief Engineer, finally brought the tracks to Belmont, on the brow of a sharp and steep ascent from the Schuylkill River. It was urged as a beneficial accessory to this plan that on the east side of that stream the railroad bed could enter at once upon a passage excavated in former years, at great expense, for the Union Canal Co. There had been a great deal of digging along the hilly part of this route. Scarcely any preparation was necessary for a railroad, and the line was clearly marked out and prepared as far east as the Ridge road, being in fact the same ground as now used by the Reading and the Willow Street railroad tracks. A difficulty at this time, of great importance, was the steep descent on the west side of the Schuylkill. This obstacle was to be overcome by a method common on English railways, the use of the inclined plane, by which cars could be hauled up or lowered down the declivity by means of an endless rope, operated by a steam engine on the summit, a contrivance which was the predecessor of the cable motor railways of the present day.

The inclined plane commenced very near the mansion of Judge Peters at Belmont, a portion of which still exists in the neighboring restaurant in Fairmount Park. The plane was a somewhat straight and steep ascent from the Schuylkill up to the brow of the hill. The passage remains now, and is dedicated by the Commissioners of the Park for use as a bridge path. There were two railroad tracks of iron rails solidly laid down upon stone sills and foundations. There were two cables which ran above ground between the tracks, upon grooved iron wheels in the centre, rising 6 or 8 in. above the surface, and returning by an underground groove or slot. The cable was of rope, made of the strongest hemp, thick and solid. The cars were lashed to this rope, also by ropes, from the under part of their platforms. There was no contrivance by which cars, when in motion, could be stopped, except at the engine house on the top of the plane. The grip, as we would call it nowadays, was very poor. The strain on the ropes was great. In most cases the ascent or descent of cars was managed safely. Occasionally, however, the fastenings would slip and then the cars would go thundering down, acquiring great momentum near the bottom, ending with violent collisions and breaking up, with destruction of the contents of the cars and piling up of debris of wheels, timber and other obstructions. A decrease in the amount of loss occurred in 1836, when Wm. Norris & Co. astonished the world of science by producing a locomotive engine, called the "George Washington," which performed the hitherto impossible feat of running up the inclined plane at Peter's Island, 2,800 ft., with a rise of 1 ft. in 14, drawing a load of more than 19,000 pounds above the weight of the engine, and this, too, at a speed of more than

15 miles per hour. It was something unexpected. Nothing like it had ever been done by a locomotive upon a railroad, and although in these modern days of improvement our locomotive builders turn out machines capable of doing any kind of work up or down grade, the present generation can hardly imagine the gratification and surprise which followed this extraordinary feat.

The width of the river near the place chosen for the location of the bridge was about 850 ft. It was admitted to be a misfortune that the structure was placed obliquely to the stream rather than straight across. The location in that manner was stated to be necessary "by overruling circumstances." The bed of the river was found to be of soft black mud, which overlaid the solid rock at a depth of from 4 to 10 ft. John C. Trautwine, architect and engineer, planned the bridge and superintended its construction. It consists of seven arches, six piers and two abutments. All the masonry is founded on the solid rock, with the exception of the western abutment and western pier, both of which stand on dry land and rest on a firm, natural gravel. The length of the structure between the abutments is 1,018 ft. in the clear. The piers are 13 ft. broad on top. They were built by coffer dams which were framed, one at a time, on Peter's Island. When ready they were launched and towed to their proper position, where, being well moored, they were finally sunk by placing large stones on a temporary platform made for the purpose. At the bottom these piers were about 80 ft. in length and 34 ft. in depth, gradually sloping upward to the floor of the bridge. At high-water mark the piers are 60 ft. long, exclusive of the pier-heads or starlings. The total amount of masonry in the bridge is 19,300 perches.

The timber work of the bridge was prepared near by, on the banks of the Schuylkill and on Peter's Island. A false work was erected on a wooden trestle, extending into the river to depths of from 25 to 60 ft., upon which the superstructure of the bridge was at first erected. Excellent timber was used, and cast iron worked into it in the shape of butting plates for the ribs and braces, burs and washers for the screw bolts, spikes, tie-bars, etc. The work of putting up the superstructure, after the piers and abutments were finished, was very rapid. It was only three months between the time the rough timber was landed before the structure was so far completed that cars could run over the roadway. When finished the sides were weather-boarded and roofed. There were large Venetian windows on each side over each pier, and two skylights over the centre of each span. When completed, the bridge, as seen from a distance, looked long, low and sombre. The dark red or brown color, which for many years the exterior has presented, has done very little toward lighting up a picture set, as this structure is in the middle of a beautiful river, with thick foliage on both sides. This bridge was built by John P. Babb, of Wilkes-Barre, a sub-contractor under Dodd, Bishop & Brittain, the principal contractors, who directed their attention more particularly to the masonry. The whole work was superintended by Frederick Erdman, Assistant Engineer. At that time it was believed that a road for ordinary travel could be carried from the east to the west side of the Schuylkill with advantage. It ran on the south side of the tracks from Broad street out, was carried over the northern compartment of the bridge, which also had a space set apart for foot passengers, and united with what was called the river road on the west side of the Schuylkill. The railroad tracks occupied one-half of the bridge, but for many years the cars were drawn across by horses, the danger by fire from sparks from locomotives stimulating constant care. It seems to be fortunate that in an existence of 52 years this bridge has escaped all dangers by fire and flood.

The building of the bridge and the laying of the track on the old canal beds to Broad and Vine streets were delayed for three years by the bitter controversies between rival interests for the location of the road. Finally, on March 24, 1831, the Canal Commissioners were instructed by act of Assembly to carry out the details of Major Wilson's plan, with inclined plane, upon condition that the city would construct a railroad from the intersection of the State road, at Vine and Broad streets, down the latter to South, with authority to extend tracks eastward. This assurance was given by Councils shortly afterward. Later on, in the same year, the Canal Commissioners authorized the bridge to be built.

The tracks of the Columbia Railroad were finished from the Schuylkill to Broad and Vine streets, and placed in connection with the track of the Northern Liberties & Penn Township Railroad, extending down to the Delaware, on Dec. 9, 1833, when there was a grand opening by an excursion from Broad and Vine streets out the railroad to the Schuylkill, where further progress was stopped by the incomplete condition of the bridge. The engineers, Trautwine, of the State road, and Campbell, of the Northern Liberties & Penn Township road, were the principal men on this excursion, which was also participated in by councilmen of the city, and commissioners of the districts. The road to the Schuylkill had been finished some time before. Pleasure cars ran from Broad and Callowhill streets, as far as Lemon Hill in May, 1832. A locomotive had run from Broad street to the Schuylkill in September of the same year. The bridge was finished in April, 1834. There was a formal opening of the whole road from Columbia down to the city on the 16th of that month. It will show the speed of travel at that time to say that the locomotive "Black Hawk" made the passage from Columbia to Lancaster in 55 minutes, and from Lancaster to the head of the inclined plane in 8½ hours, including all stoppages, taking in wood, water, etc. It took considerably more than one hour to bring the passengers down the plane and to Broad and Callowhill streets. So that it may be said that the passage from Columbia to Philadelphia took about 11 hours. There was only a single track at this time.

The "Black Hawk" was built in 1833, by Long & Norris, and ran in competition with M. W. Baldwin's "Old Ironsides," finished in 1832. These engines being the first constructed by builders who afterward became eminent, were modeled upon English machines. A few years' competition led to great improvements in the character of the machinery and motive power; so great in fact that the contrast between early and late engines, to those who know not of the improvements of science, would seem almost incredible. The Reading Railroad came down the river from Pottsville on the west side of the intersection of the State road at the foot of the inclined plane and crossed over the bridge. It was opened for traffic Jan. 8, 1842. When the state of Pennsylvania resolved to dispose of the state works, in 1857, the Reading Railroad bought the track and roadway from Broad and Vine and the Belmont bridge, and became the sole owner of that property.

## National Association of General Passenger and Ticket Agents.

We give below, nearly in full, the official report of the proceedings at the recent semi-annual meeting in New York:

The Convention was called to order at 11 o'clock a. m., Sept. 21, 1886, John N. Abbott, President, in the chair.

A call of the roll developed the fact that a quorum was present.

The Executive Committee acted favorably on all credentials presented and reported in accordance with that fact through their Chairman, Mr. Hanson.

Special credentials for this meeting were presented as follows:

By Mr. W. M. Anthony, representing the Fitchburg Co. By Mr. S. L. Warren, representing the St. Paul, Minneapolis & Manitoba. By Mr. J. W. Coleman, representing the Illinois Central.

Next order of business was the selection of the next place of meeting. Washington, D. C., Jacksonville, Fla., and Atlanta, Ga., were placed in nomination. The result of the vote was 38 for Washington, 15 for Jacksonville and 3 for Atlanta. Whereupon the Chair announced Washington as the next place of meeting, the date for the same being March 15th, 1887, at 11 o'clock a. m.

Unfinished business was next in order.

The committee of six appointed at the fall meeting of 1885 to report on a form of mileage ticket having no report were granted further time.

Negative action was taken on the resolution to amend the Constitution so as to have but one meeting a year, notice of which had been given at the annual meeting, this action being taken after a discussion participated in by Messrs. Ford, Jas. L. Taylor, Atmore, Jos. M. Brown, F. E. Brown, Stebbins, Emery and Cummings.

The following resolution was offered:

"Resolved, That it is the sense of this Association that any loss sustained by the quoting of an incorrect rate to an agent should be borne entirely by the road making the mistake, and connecting lines should not be asked to participate in the loss, except that when such mistake is made by the compiler of a rate sheet, the road which is a party to the rate sheet and which is the initial line from the point from which the incorrect rate is quoted, should accept full responsibility for the error of its representative and should assume the entire loss resulting therefrom." Lost.

The following was offered, seconded and adopted:

"Resolved, That any ticket, single or round trip, the purchaser of which is unable to use through to destination, should be redeemed by the initial road covered by the unused portion of the ticket on presentation within the limit thereof, at the difference between the rate at which the ticket was sold and the regular rate of the same class for the portion of the route already traversed, and that on receipt of the unused portion of the ticket the road by which the ticket was issued should report proportions accordingly."

After which the following was offered and seconded:

"Resolved, That the editor of the Official Guide, Mr. W. F. Allen, be requested to ask such transportation lines as do not now have their stop-over regulations shown therein, for such stop-over regulations, to the end that every line whose table appears in the Guide, may also show what their rules on this subject are. And that he also be requested to call attention to this resolution in his editorial column in his next issue." Adopted unanimously.

The General Committee reported the following resolutions for the consideration of the Convention:

"Resolved, That the National Association agree upon uniform styles and conditions of through tickets, with the view to their gradual introduction and ultimate general adoption by all companies issuing through tickets over the lines of other companies."

After remarks by Messrs. Ford, Emery, Monett, Macmurdo, Stebbins, J. L. Taylor, Horner, Atmore, Wrenn, Carpenter and Flanders, the resolution was adopted. Acting upon the ideas brought out by the discussion above referred to, and by proper action, the Chair appointed a Committee of five to report on this question at the next meeting. The following are the Committee: Messrs. Flanders, Monett, Ruggles, J. L. Taylor and Thrall.

The General Committee reported further as follows:

"Resolved, That the application of the Travelers' Protective Association for so-called week end tickets be referred to the several passenger committees organized under existing agreements." Adopted.

"Resolved, That the communication of Mr. J. R. Buchanan, General Passenger Agent of the Sioux City & Pacific Railroad, in relation to fares and objectionable methods in the checking of baggage, be referred to the Western Passenger Committee." This action was taken.

"Resolved, That the communication of Mr. McCaull representing a Committee of Theatrical Managers be read for the information of the Convention, and that Mr. Marcus R. Mayer, acting for that Committee, be invited to attend a session of the convention to more fully present the views of the theatrical managers." Adopted. Adjourned until 3 p. m.

## AFTERNOON SESSION.

Convention called to order at 3 p. m. by the President.

The communication from Mr. McCaull referred to in the report of the General Committee, was read to the Association as recommended by the Committee.

The following was here offered, seconded and adopted:

"Resolved, That the Compendium of Rates and Divisions, published by Mr. W. F. Bailey, be recognized as a valuable compilation, and that he be encouraged to complete and perfect it, with the view of its becoming the official authority in matters relating to rates and division."

Appropriate resolutions on the death of Mr. J. W. Cary, late of the Lake Shore & Michigan Southern, were unanimously adopted.

The following were then elected honorary members: Mr. C. A. Waite, nominated by Mr. Flanders; Mr. C. J. Waller, nominated by Mr. Danley.

Mr. Marcus R. Mayer and Mr. Daniel Frohman were granted a hearing on the matter reported by the General Committee and referred to above, which was in effect a petition for more favorable rates and conditions for traveling theatrical companies.

After further remarks by Mr. Frohman, the Association after some discussion referred this question by proper action to the New England, the Trunk Line, the Central Traffic, the Southern, and the Western associations.

After adopting the usual resolutions of thanks, the Association adjourned.

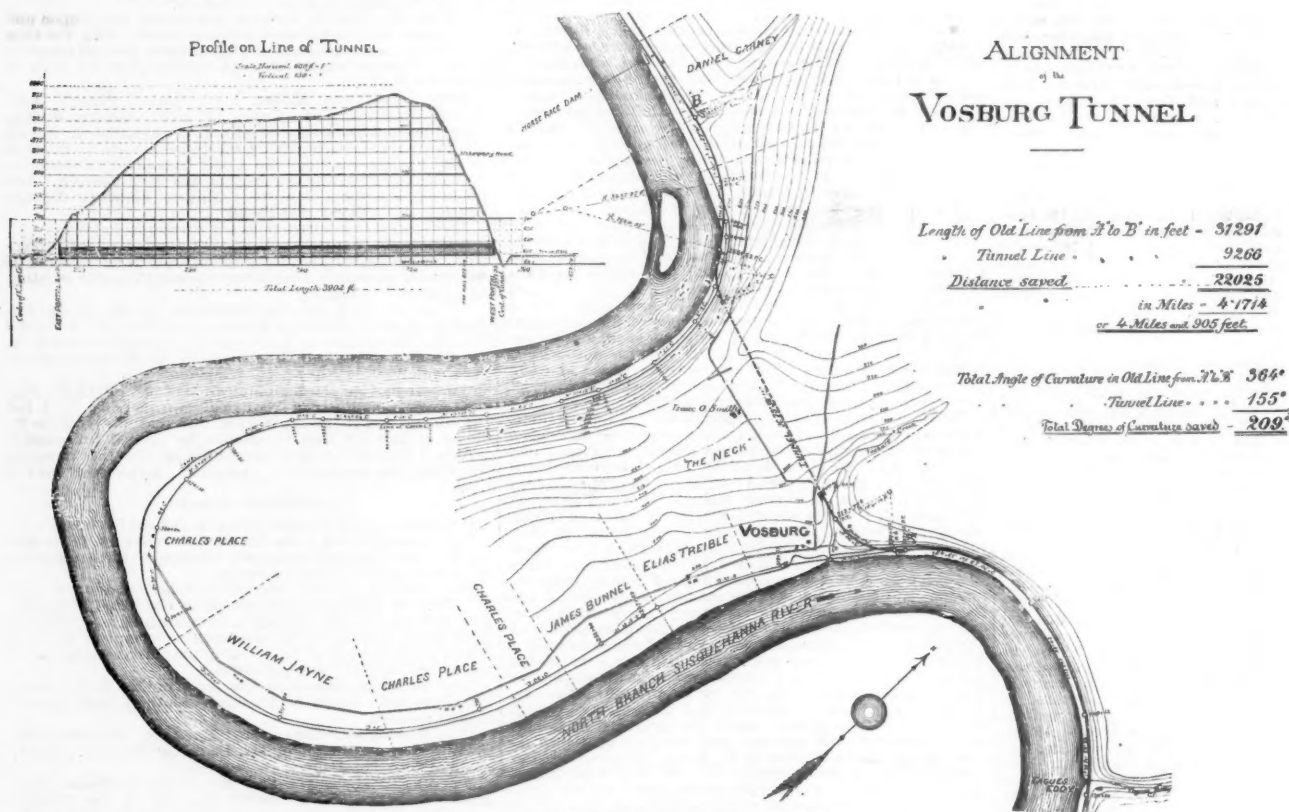
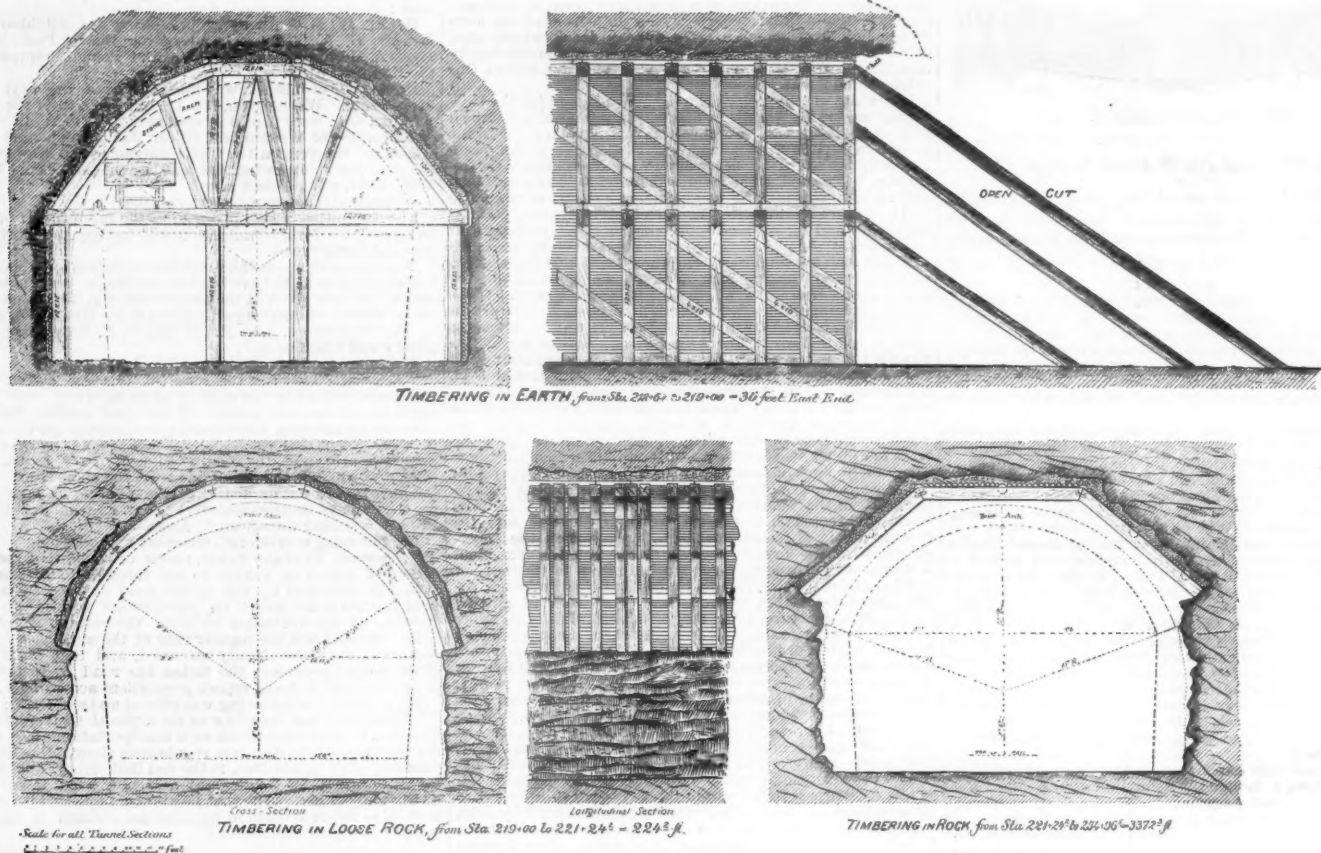
## The Vosburg Tunnel.

## II.

The east heading was started on an offset line 8 ft. to the left of the centre line and a little lower than the regular heading. It was about 7 ft. high and 8 ft. wide in the clear, and was carried in this manner through earth and loose rock, requiring heavy timbering, for about 250 ft., until the rock became sufficiently solid to allow the regular heading section at the centre of the tunnel to be adopted (about 15 ft. wide and 7 ft. high). Owing to the varying conditions of the rock roof encountered the height actually varied from 6 to 13 ft. The west heading being in rock throughout had the regular section from the start.

## DISPOSITION OF MATERIAL.

In enlarging the heading for the arching and timbering, the material in the roof was worked from below so that, as it collected on the floor of the heading, it formed a natural bed or the workmen to stand on while putting in the timbers for



THE VOSBURG TUNNEL—FIG. 1.

the support of the roof. The bench was generally kept from 25 to 30 ft. back of the enlargement of the heading and the material accumulating in the heading was worked back and down the bench, where it and the material from the bench were loaded into small cars on each side of the tunnel. At the centre near the foot of the bench between the two tracks a derrick and hoisting engine, mounted on a movable platform, allowed rocks weighing two tons to be easily handled, and served to swing the empty car-bodies into position for loading and to replace them on their trucks when loaded. The cars were drawn out by mules, and the material on the west end used to fill along the river. On the east end the tunnel-cars were drawn up an incline near the portal and the material dumped into large cars provided by the railroad company for distribution along its line wherever desirable.

## TIMBERING.

Three styles of timbering for the support of the roof were used, varying according to the material encountered. From the west portal to within about 250 ft. of the east portal the section known as the "rock-section" was used, consisting of bents spaced from 4 to 6 ft. apart and formed of three pieces of 12 x 12 in. hemlock, the horizontal piece or cap being 14 ft. long, the legs 14 to 16 ft. long, the lower end securely held in niches cut in the rock. From 250 ft. inside of the

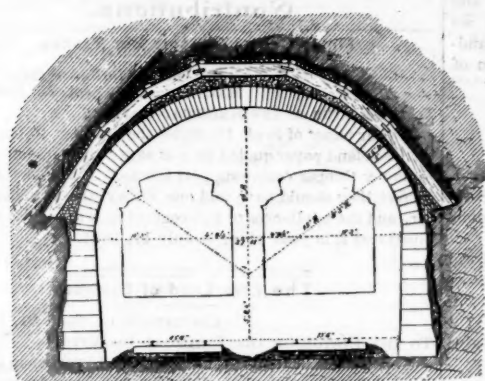
east portal the timbering of the roof was put in from the inside, working toward the face, the sections used being known as the "loose-rock" and as the "earth" sections. The former consisted of circular bents spaced from 1½ to 4 ft. apart and formed of nine pieces of 12 x 14 in. hemlock, doweled together at joints with 1½ in. iron dowel pins 9 in. long; the end of the last piece on each side resting on a shelf or niche in the rock. The earth-section consisted of circular bents spaced from 1½ to 4 ft. apart and formed of seven pieces of 12 x 14 in. hemlock, with a 12 x 16 in. hemlock sill, resting on 12 x 15 in. hemlock posts; suitable 12 x 12 in. hemlock braces were introduced to catch the centre of the cap and the joints of the segmental pieces forming the circle, the foot of these braces resting on the sill immediately over the lower posts.

Great attention was paid to making a good splice of the sill, and all joints of the timbers were secured from bent to bent by horizontal timbers and stays, as well as possible. Heavy inclined longitudinal struts were also brought into service to resist the heavy pressure of the earth lengthwise with the tunnel. During heavy rains a great weight and crowding pressure was brought to bear on these bents, and it required careful vigilance and constant work to introduce new bents and replace timbers that had been crushed, in spite of the heavy timbering and bracing employed.

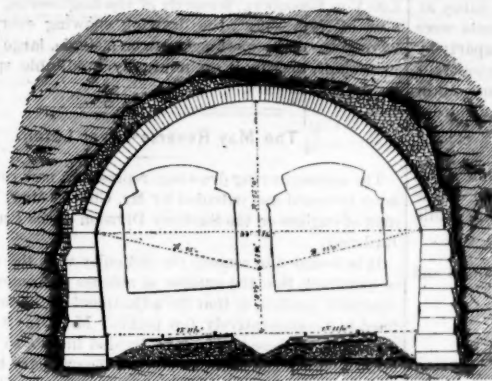
Throughout the tunnel suitable oak lagging was used above the bents, and the spaces between the lagging and the excavated section wedged full of flat broken stone.

## ARCHING.

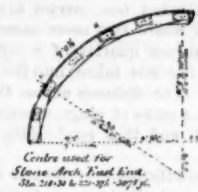
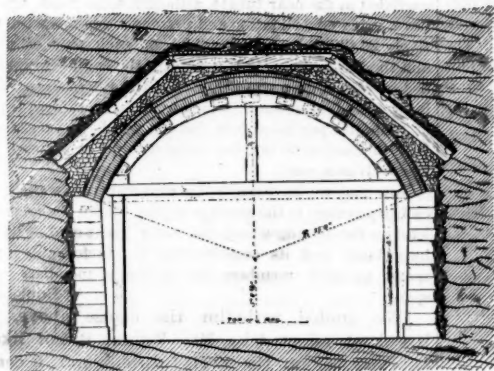
The tunnel is arched throughout with stone or brick, resting on abutments of stone, and in several places on a natural berm of rock. About one-third of the tunnel arching was required without any question, namely, in all sections where earth, loose rock and soft shales were met. After considerable hesitation and very careful investigation, coupled with reports of eminent geologists and tunnel experts, who examined the work in a consulting capacity, and after frequent occasions when good rock left as apparently perfect became unreliable in a very short time, the opinion at last became prevalent that the arching was a necessity if all chances of danger after the completion of the tunnel were to be removed beyond all doubt. From the peculiar stratification of the different rocks, in layers of varying thickness from one inch to five feet, lying almost horizontal crosswise of the tunnel while dipping slightly lengthwise with it, it was an impossibility to obtain a roof in which the exposed ends of the layers, where cut through, did not sag and break away from the upper layers after a time. This was probably more extensively the case owing to the use of high explosives



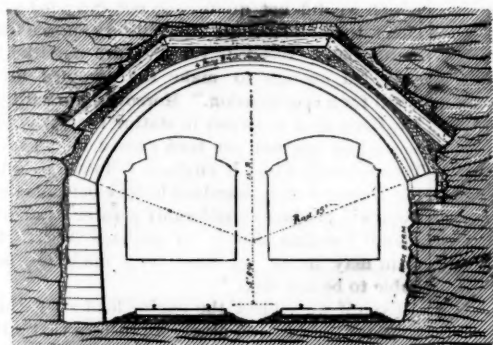
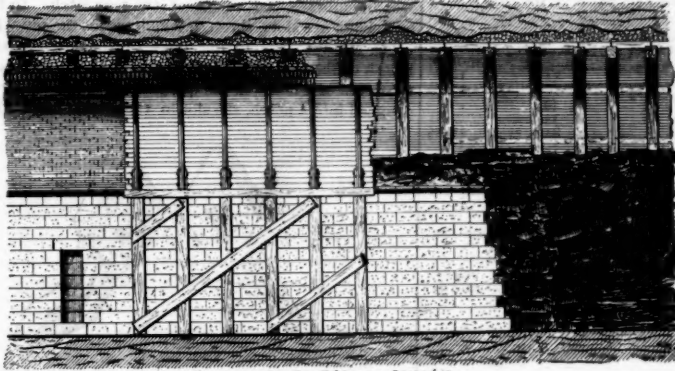
STONE ARCH—EAST END.



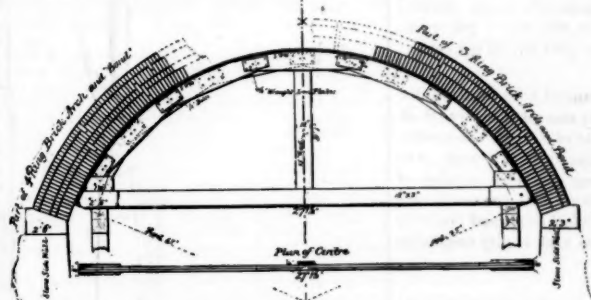
STONE ARCH—WEST END.

Centre used for  
Stone Arch, East End.  
Sta. 254+00 to 257+35.Centre used for  
Stone Arch, West End.  
Sta. 257+35 to 259+00.

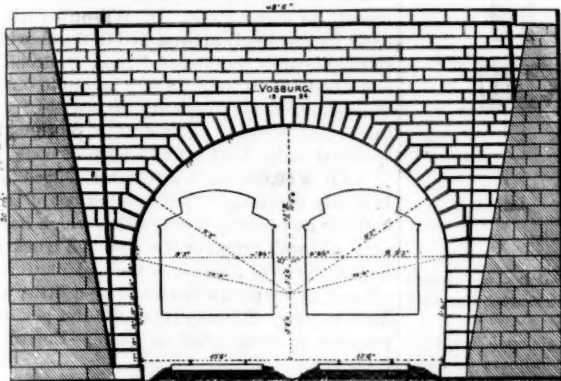
SECTIONS SHOWING TIMBERING, CENTRING AND ARCHING IN ROCK.—from Sta. 221+37' to Sta. 254+00—3262 1/2 ft.



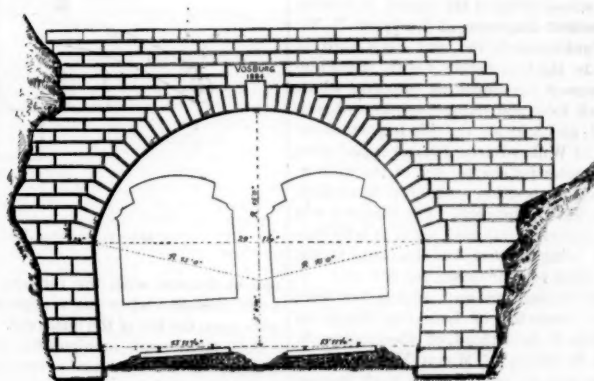
SECTION SHOWING BRICK ARCH RESTING ON BEAM for 365 ft. until the tunnel.



SECTION SHOWING BRICK ARCHING &amp; ELEVATION OF CENTRE.



EAST PORTAL



WEST PORTAL

THE VOSSBURG TUNNEL—FIG. 2.

which shattered the material and loosened what bond there was between the individual layers. It is a question whether, with a more judicious use of explosives, a considerable amount of side-wall abutments could not have been avoided, and the arch placed upon a natural berm of rock.

The stone abutments and arches were built mostly of black limestone from Union Springs, N. Y. The brick used were all hard-burned red brick, generally burned especially for the purpose, and were subjected to a careful and extensive series of tests before acceptance. All brick, immediately before use, were well sprinkled with water from half an hour to one hour.

Taylor's Portland cement was used for all stone and brick work, and each car lot as received was examined and tested with a Fairbanks 1,000 lbs. cement testing machine. The stone abutments are all first-class work and from 2 1/2 to 3 ft. wide. The stone arching is built with cut stone sheeting from 18 to 30 in. thick.

The brick arch varies according to the nature of the material above it from 21 1/2 in. to 25 1/2 in. in thickness, and is built of three or four rings of brick laid principally as headers, bonded together however by a stretcher course about every twenty-first course. The top of the brick arch was coated with a layer of about one inch of cement mortar. Where the roof of the tunnel was composed of earth, the

space between the top of the arching and the roof timbering was filled with concrete well rammed; at all other places, stone carefully placed by hand to prevent injury to the layer of mortar on top of the arch, was used for packing over the arch.

#### CENTERING AND DRAINAGE.

The centres for the arching were made of white oak, spaced about 4 ft. apart and tied together in sections of 27 ft., the ends of each centre resting on two 4-in. smooth oak planks running lengthwise with the tunnel; the upper plank fastened to the centres above it, the lower plank secured to the supporting posts in front of the side walls below it. Three such sections of 27 ft. each, making a total run of 81 ft., were used at once. When a section was ready to be moved the wedges between the two planks were removed, and the planks being well greased, the entire section of 27 ft. was easily drawn forward by the hoisting engine, the operation of moving the three sections not taking over two hours.

In the drainage of the tunnel very little water is encountered, excepting near each portal, where in wet weather considerable leakage occurs through the seams of rock at the west portal, though tight at the time the heading was excavated. The percolation of water since its enlargement has extended from 100 ft. originally to 300 ft., or to the end of the stone arch. For its entire length the brick arch is gener-

ally in rock perfectly dry at all times, but in order to provide against any possible contingency drains were provided back of the arch and abutments every 12 1/2 ft., and openings left at the top of the water-table. The road-bed, consisting of a foot of well broken rock ballast, is drained by side ditches, the water running with the grade, excepting the 300 ft. at the west end, which is carried out of that end of the tunnel.

Suitable man holes or niches are provided in the side walls every 50 ft. in alternate sides of the tunnel.

#### THE ENGINEERING WORK.

The engineering work required in the location of this tunnel, while not offering any especially difficult problems, is particularly noteworthy for the care taken in the preliminary work and the almost astonishing accuracy attained. To fix the tunnel tangent exactly after the line had been established with ordinary instruments, a special tunnel transit, made by Heller & Brightly, of Philadelphia, for the construction of the Musconetcong Tunnel on the line of the Lehigh Valley Railroad in New Jersey, about twelve years ago, was used again with perfect satisfaction. Three stone monuments were built approximately on the same level, one on top of the tunnel mountain and one on mountains opposite either end of the tunnel from one to two miles distant. The points on the distant monuments being assumed as correct, the one over the tunnel was carefully centred in line with the distant

ones, and the thus established line carried to the valley at each end of the tunnel, where two more monuments were carefully centred about one quarter of a mile apart; by means of the latter the line was taken into the tunnel from each end by foresights. The distance across the mountain was fixed by leveling in a series of plugs, measuring the distances from tack to tack and thus establishing the correct horizontal lengths.

The lines as carried into the heading checked within  $\frac{1}{8}$  in.; the grades within  $\frac{1}{8}$  in., and the horizontal distance as previously established by measuring over the mountain within one inch.

#### PROGRESS OF THE WORK.

The following dates will illustrate the time required and the progress made during construction:

May 19, 1883, east heading started by hand.  
Sept. 7, 1883, machine drills started.  
May 12, 1883, west heading started with hand-drills.  
Aug. 5, 1883, machine drills started.  
July 13, 1884, headings met.  
June 15, 1886, tunnel completed.  
July 25, 1886, opened for traffic.

The rate of progress of the various parts of the work was as follows:

	Maximum rate— ft. per week.	Average ft. per month.
Heading, east end.....	85	150
"    west end.....	51 $\frac{1}{2}$	131
Timbering and bench, east end.....	42	145
"    west end.....	30	115
Brick arch, east end.....	314	187 $\frac{1}{2}$
"    west.....	187	144

#### QUANTITIES.

The total quantities of excavations and materials used for the tunnel proper were about as follows:

Tunnel excavation.....	123,680 cu. yds.
Stone abutments.....	132,501 "
Stone arching.....	1,956 "
Brick arching.....	8,030 cu. yds. (4,516 $\frac{1}{2}$ M. bricks).
Stone filling over arch.....	16,000 cu. yds.
Concrete backing.....	155 "

#### APPROACHES.

Earth.....	75,000 cu. yds.
Loose rock.....	18,500 "
Solid rock.....	5,000 "

The proportion of soft and broken bricks to the kiln (burned specially for this work) was with Townsend's brick (2,079 $\frac{1}{2}$  M.) 5 per cent., with Weyer's brick (1,186 M.) 7 per cent., with Richardson & Campbell's bricks (599 M.) 10 per cent.

#### ACCIDENTS.

Four falls of rock occurred in the tunnel with fatal results: six men meeting their death thereby; one of them was S. B. Sickler, of Tunkhannock, a graduate of Lehigh University, employed in the engineering department of this work, who was killed Dec. 5, 1884. Considering the large number of men employed, the average being about 300, the death rate is very small. No accidents of any kind happened from the use of powder. A very remarkable and highly creditable record.

#### PERSONNEL.

The tunnel was located and built under the direction of A. W. Stedman, of Mauch Chunk, Pa., Chief Engineer of the Lehigh Valley Railroad and associated lines, and was under the immediate charge of G. B. Owen, of Towanda, Pa., Assistant Engineer, upon whose division the tunnel is located, aided by Isaac Dox, Resident Engineer, of Lockport, N. Y., W. B. Osterhout, of Tunkhannock, Pa., and Jesse Bird, of Towanda, Pa. Owing to the treacherous nature of the material, the railroad company appointed an inspector whose duty it was to see that all loose and dangerous pieces of rock were promptly removed, and selected for this important position Thos. P. Gaynor, of Wilkes-Barre, Pa., an experienced miner in coal and contractor for shafts, etc., of the anthracite coal region, who filled the position creditably, as no more accidents occurred after his appointment. The masonry was watched by competent inspectors day and night at both ends of the tunnel, the men being selected for this duty by the railroad company from their regular mason-force.

The contractors for the tunnel-work and approaches were Lentz & Co., the firm consisting of Lafayette Lentz, of Mauch Chunk, Pa., Calvin E. Broadhead, of Flemington, N. J., D. C. Hickey and J. H. Byron, of Mount Vernon, N. Y. However hard engineers may strive to finish a work successfully, or however close a contract may have been drawn to cover all possible contingencies, without the constant goodwill and daily assistance of the contractor the best laid plans will be frustrated or carried out imperfectly. Those familiar with the working-operations at the tunnel during the past years are all ready to testify to the ability of the contractors and to their good-will and interest in the work in hand. A liberal entertainment was furnished by them on the occasion of the formal opening of the tunnel.

"Lastly, but not least" the engineer's desire to give credit, although not by name yet not the less sincerely in appreciation of their work, to that army of workers, who, toiling day and night in the various and numerous trades and callings adapted to their capabilities, have all added their share to the construction and completion of this tunnel," which, while not the largest, can compare favorably with any tunnel in the world for its quality of work and the careful attention shown to details.

#### COST.

The tunnel and approaches, with track laid and ballasted, cost as nearly as may be \$750,000. Out of this amount the approaches cost \$45,000 to \$50,000, making the cost of the tunnel proper about \$700,000, or \$179 per foot.

For the particulars here given of this emphatically well-conducted work we are indebted to Mr. A. W. Stedman, Chief Engineer, and G. B. Owen, Assistant Engineer, of the Lehigh Valley road. All the engravings given in this and our preceding issue are direct photographic reproductions on a reduced scale from an original drawing prepared by Mr.

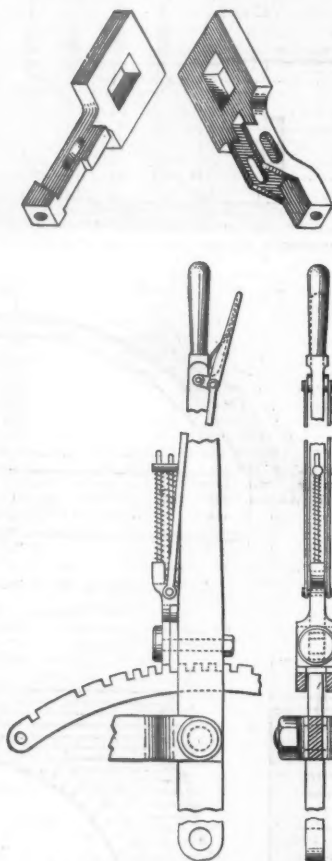
Leo Von Rosenberg, formerly of the Engineering Staff and now of New York; the drawing showing everything we have given and something more on a single, large and handsome sheet, making it an unusually creditable specimen of the draftsman's art.

#### The May Reverse-Lever Latch.

The accompanying drawings represent a new reverse-lever latch invented and patented by Mr. Charles May, Road Foreman of engines on the Sunbury Division of the Pennsylvania Railroad.

It is designed to remedy the difficulty with the usual form of quadrant, that the number of notches is somewhat inconveniently limited, so that the adjustment of the cut-off is confined to a comparatively few points. Mr. May's device enables each of these points to be divided in two, so as to give twice as fine an adjustment as with the ordinary latch.

This is accomplished by using two independent latches, one sliding upon the face of the other. They are retained in position by a square-shanked bolt passing through slots in the lower part, as shown, and by lugs on the forward latch which embrace the shank of the rear latch. In these lugs and shank are slots, through which passes the pin which connects them to the lifting links of the latch-handle. The length of these slots is equal to the diameter of this pin plus the depth of a notch in the quadrant. When either latch is dropped into a notch, the slot in the other latch allows the



May's Reverse-Lever Latch.

pin to descend with the former. The latches are of such a thickness that when one is engaged with a notch the other rests upon the top of the quadrant.

Both latches are manipulated by a single latch-handle or trigger, which is the same as that now in ordinary use, and is operated in the same manner.

In fig. 1 of the drawings the main or rear latch is shown in engagement with the seventh notch of the quadrant. Should the engineer wish to use a trifle less steam, he can lift the main latch, pull the lever back a little and drop the forward latch into this seventh notch, which will lock the lever half way between the seventh and eighth notches.

On the other hand, if he wishes to use a little more steam than the seventh notch usually affords, but not so much as he will get with the main latch in the sixth notch, he can drop the extra latch into the sixth notch, which will hold the lever about half way between the sixth and seventh notches.

This latch has been tested on the Pennsylvania Railroad during the last five or six months, and we are informed through the inventor with the very satisfactory results shown in the following record, in which engine 2,014 was provided with the May latch after March, 1886, and engine 2,086 had the ordinary latch throughout:

Engine.	Feb. and March.	April.	May.	June.
No. 2,014.....	7,000	5,900	5,850	6,290
No. 2,086.....	6,900	6,200	6,345	7,458

Messrs. Whittlesey & Wright, of Washington, D. C., are the agents for introducing the device, which can be applied to the ordinary reverse lever without any change of lever or quadrant, so that the cost of the device is merely that of the material and the time of the machinist who makes it and puts it on. This for one locomotive is said to be less than ten dollars, or when a number of latches are made at the same time, about six dollars.

#### Contributions.

##### Finlay Centre Support Car Trucks.

Hot Springs Railroad Co.,  
MALVERN, Ark., Sept. 25, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your paper of Sept. 17, under the heading 40-ton cars, the Cleveland paper quoted by you says "the cars have three Finlay & Conger centre-support trucks." To make this road correct they should have said one Finlay truck under each car, and the appliances of this centre truck are just as you illustrated it in your paper of July 11, 1884.

L. FINLAY.

##### The Live Load of Bridges.

CINCINNATI, O., Sept. 21, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Your article of the 17th inst., on "Good Practice in Bridge-Buying," is in the right direction, but your fragmentary quotation of my remarks on Mr. Wilson's Specification-load imparts to them, I think, an unfair meaning. What I said was: "The live load adopted by Mr. Wilson is not likely to be exceeded in the near future, although some roads are, I believe, using consolidation and passenger engines with respectively 26,000 lbs. and 45,000 lbs. on each pair of drivers," and the fact remains that, although the engine weight specified by Mr. Wilson was below that already in use at the time, his live load, as a whole, which includes a uniform train load of 3,000 lbs. per lineal foot, has not yet been exceeded, even with the cars of 60,000 lbs. capacity now being used on the Pennsylvania road.

Now that we have reached a uniform train weight, practically equivalent to the average engine weight, the concentrated load on the driving-wheels has lost a great deal of its former importance and its consideration is exacted only for short spans, parallel members and primary members of long spans.

G. BOUSCAREN.

[We quoted verbatim the clause above, "The live load adopted by Mr. Wilson is not likely to be exceeded in the near future," and it certainly never occurred to us that the closing clause which we did not quote was not intended to say in effect that "although Mr. Wilson's engine loads are occasionally exceeded, yet they are not likely to be exceeded enough to make the assumed loads too small for a specification." Moreover, we hardly think Mr. Bouscaren is correct in stating that "the live load as a whole has not yet been exceeded." Two of the Pennsylvania Class R engines, followed by a train of the Pennsylvania standard hopper-bottomed gondola cars, will produce considerably greater strains in any span if less than 200 ft. or perhaps 300 ft. Such a train may never yet have been made up, but it is liable to be any day.

Even if we neglect the engine load altogether, and consider the car load alone, we suspect that strings of three or four cars could be found by no very long search on any of the larger lines which will approach, or even exceed, Mr. Wilson's limit. In fact, 3,000 lbs. is closely approached in the above mentioned standard car of the Pennsylvania Railroad itself. It has a body 24 ft. long, 26 ft. 8 in. out to out of buffers; weight, 19,800 lbs.; capacity, 50,000 lbs.; total, 69,800 lbs. actual weight, against  $24 \times 3,000 = 72,000$  lbs. specified bridge load for its length of body, and  $26.07 \times 3,000 = 80,000$  lbs. for its total length out to out. It is only necessary to put another board on its side to increase its capacity to 60,000 lbs., which its wheels will perfectly well carry, or if a wrecked truck happens to be put on top of the car, or the end platforms are left off and its couplings shortened up a little, we have our limit at once. Already it is 2,620 lbs. per foot, and in practice probably 2,800 or more.—EDITOR RAILROAD GAZETTE.]

PHILADELPHIA, Sept. 27, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your article entitled "Good Practice in Bridge-Buying," published in your issue of Sept. 17, in your reference to my paper on "Bridge Specifications," read before the American Society of Civil Engineers, I beg to correct an error in the statement that this was a "proposed new form" of specification, and also that the "typical" live load adopted "was exceeded in considerably less than six months."

These specifications have been in use for some years, although never before published, and the typical engines as there given were adopted as the basis for calculations some eight years ago.

JOSEPH M. WILSON.

[Mr. Wilson's paper, presenting the specifications from which we quoted, was read before the American Society of Civil Engineers, June 25, 1885, and published June, 1886, with very numerous discussions. It is stated in the paper that the typical loads given were decided on "several years ago," but the specifications are merely stated to be "now" standard on the Pennsylvania Railroad, and the offering of the paper containing them "in the hope that it may contribute something to the profession" may be fairly said to imply that they are "proposed" for more general adoption and to an implied intention to modify them should discussion develop any desirable modifications. It was in this sense only that we spoke of them as

"proposed." The essential fact still remains that the specified loads had been exceeded by the engine illustrated in the same issue of Sept. 17, 1886, before the paper was published.—EDITOR RAILROAD GAZETTE.]

#### Compound Locomotives.

NO. 28 BOULEVARD DE CLICHY,  
PARIS, Sept. 17, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I have noticed in one of the last numbers of your excellent periodical an article with illustrations on the compound locomotives constructed on the continent.\*

You are not unaware that I was the first to construct locomotives on the compound principle, and that the engines built after the so-called Von Borries or Worsdell systems are nothing more, with certain modifications of detail, than a copy of the engines which I built in 1876.

I think you will receive with interest three photographs relative to compound locomotives constructed by me, of which the two first show the first compound locomotives which were ever built:

No. 1. Compound locomotive built in 1876 at Creusot for the Bayonne & Biarritz Railroad; standard gauge; weight 19 tons (of 2,204 lbs.), in service.

No. 2. Compound locomotive constructed in 1878 at Paris for the same road; 24 tons in service. One of these engines was exhibited at the Paris Universal Exposition in 1878.

There are three engines of type No. 1 and two of type No. 2, which have been in use from the beginning on the Bayonne-Biarritz road, which uses no other system.

No. 3. Compound locomotive for the railroad from Athens to Laurium, Greece, built in 1883 at the Esslingen Works, Wurtemberg; weight, 28 tons in service; gauge, 1 metre.

There was read recently at the Institution of Civil Engineers in London, a paper by Mr. Borodin, Locomotive Superintendent of the Russian Southwestern Railroad, on experiments made by him with a locomotive altered into a compound under my system. These experiments lasted for five years, and showed that the reconstructed machine developed an equal force with 25 per cent. less fuel than other similar machines, not altered.

I will send you drawings of this engine and of a new compound locomotive with four cylinders and flexible truck, which I have designed for roads having curves of short radius.

A. MALLET.

[There can be no question that to M. Anatole Mallet alone belongs the credit for the first invention of the modern compound locomotive. Webb, Von Borries, Worsdell and others, by whom various modified types of the compound principle are named, followed after him in the matter, and probably would be the last to claim otherwise. In fact, Webb and Von Borries made their first tests with engines of his type. This is so well understood and so generally admitted that it did not seem necessary to refer to the fact in our article, which was restricted to a discussion of a few special designs of compound locomotives, and did not pretend to give a complete résumé of the status of the type.]

We gave a brief history of the introduction of compound locomotives in our issue of Aug. 28, 1885, where M. Mallet's claims are fully recognized. As is usually the case with the introduction of any new device, evidence is forthcoming that the idea had been previously conceived by others in a more or less definite way, and even embodied in an actual locomotive as far back as 1850, but M. Mallet was the first to bring the compound locomotive to the status of an accomplished fact. The locomotive referred to by him as built in 1876 was illustrated and described in the *Railroad Gazette* of Dec. 21, 1877; the others are still of the same general type, even in the details.—EDITOR RAILROAD GAZETTE.]

#### Cleaning Tracing Cloth.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of Oct. 1, 1886, you give quite a number of methods of removing grease from tracing cloth, but why do you omit common chalk? It is without a doubt the simplest and best remedy, and its application simple.

First, scrape it over the tracing cloth, and then thoroughly rub with a soft rag. Again you suggest using the dull side. As you know, since blue printing has come into general use, it is the usual custom to keep the tracing as the standard drawing.

Suppose some change or improvement should occur in the particular machine you have drawn, which would you prefer, to alter that tracing which is made on the dull or that made on the glazed side?

JOHN GESSLEMAN.

#### THE SCRAP HEAP.

##### Railroad Young Men's Christian Association.

The *Headlight*, published by the Detroit Association, reports a prosperous condition of affairs. The reading room at the Brush Street Branch has been refitted and is now well supplied with reading matter. The entertainment committee has arranged for a popular series of entertainments, including lectures and concerts, for the winter season.

The *Monthly Reporter*, published by the New York Association gives the following notes in addition to those published last week:

"Cottage meetings are to be held every Wednesday evening during the season, at White Plains. Railroad men and their families are cordially invited.

"Our work on the West Side is to be strengthened by the

opening of a room at Sixtieth street and Eleventh avenue for the special convenience of the men who run into the yard at that point.

"Mr. Neason Jones, who for the past six months has been associated with Mr. Cole in our West Side rooms, has entered upon his duties as Assistant Secretary in charge of the Weehawken and New Durham rooms.

"The new association at Frankfort has entered upon its work with splendid prospects of success. The officials of the West Shore Railroad render all the aid possible, and the men show a keen appreciation of the benefits offered."

#### Old, but Timely.

The flurry in New York & New England stock in Wall street reminds a cotemporary of an old story which will bear repetition, and which was told of Uncle Daniel Drew, of famous Wall-street memory. Uncle Daniel got short of Harlem stock, and up shot its price. He squirmed, but couldn't cover. Each hour piled his losses higher until finally, to desperation driven, he made a call upon his great cotemporary magnate of the stock market, bluff old Cornelius Vanderbilt.

"Commodore," quoth Uncle Daniel, his piping voice a squeak, "Commodore, I've got to git some Harlem, and nobody ain't got none."

And then it was that the Commodore made that not quite consoling but extremely philosophical remark, famous even unto this day in Wall street:

"Sonny, don't you ever sell what you ain't got!"

#### The Conductor's Tribulations.

"Do I look like a Pennsylvania Railroad conductor?"

The blue and silver gentleman leaned gloomily against the fireless stove and viciously kicked over the array of lanterns which the brakeman had just lighted and set in the forward end of the rear car of the 9:45 accommodation from Harrisburg.

"Well, John, you're no dude," said the traveling man who teetered over the arm of the third seat from the door, and thereby contrived frequent occasions to beg the pardon of the pretty girl who had got in at Coatesville as the accommodation jog trot sent him tipping over on her.

"I should say not," said the conductor. "Why, I've been too sick of it to get shaved for the last two days. I ain't had my boots blacked since yesterday. I don't care whether my clothes is dusty or not. What's the use?"

The conductor's tone was really desperate for a blue and silver gentleman. The traveling man tipped over on the Coatesville girl again, joined in her laughter inspired by the suggestive sound of some vitreous article in his pocket as it clanked against the ash of the seat arm, and attempted to console his friend.

"Oh, never mind, John," he said, "it won't be long. S'pose you was runnin' reg'lar out of Atchison or somewhere else in the cowboy country. Why, these jays ain't a circumstance to 'em."

"I don't have to run out any Atchison," replied the conductor, somewhat offended at the idea of his dignity being lowered to any point west of Chicago.

The brakeman stuck his head in the door and drawled Powellton avenue in the parish clerk manner of the well-conducted brakeman. There was a huddled rush of countrymen for the door. The traveling man picked himself out of the pretty girl's lap with genuine occasion to ask her pardon. The conductor planted himself, colossus fashion, across the aisle and began a speech: "Passengers will please remain seated until the train comes to a full stop—There is no necessity—No, sir, we are nowhere near Bristol—Madame, I can't tell whether your husband is outside there or not—Great Scott!"

With the last exclamation the conductor undammed the crowd of country people, rushed out on the platform, jumped down and snatched a drunken rustic from the path of a west-bound freight, and reappeared in time to throw a little boy's cap, which the little boy's mother had forgotten, after him. Then as the train started again he resumed his place against the stove with a look of injured innocence at the traveling man, which seemed to say: "Can the cowboy country beat this?"

There was the silence of assent to the conductor's facial inquiry, and he went on: "Its fairs—not f-a-r-e-s, but f-a-i-r-s—county fairs. County fairs. This crowd has been drawn to see prize hogs and pumpkins, pitchforks and thrashing-machines. It's been so for a week, and it'll be for a month. It is so every year. This gang's mostly from the Lancaster fair. We had just such another crowd at Harrisburg, from the grangers' picnic, but we got rid of most of them by the time we got to Columbia. Eight car-loads of people, and not one-tenth of them ever travel except this once a year. I've run the theatre train out of Jersey City on the New York Division every week-day for a year, and Saturday nights it was pretty tough, but it wasn't a white marker to this. You might have half a dozen drunks, but those drunks were used to traveling and used to being drunk. But take a man who ain't used to traveling and ain't used to being drunk, and have him traveling and drunk at the same time and it's a great combination. Listen to that, will you?"

The tipsy howls of the four young men who had a bottle filled with Highspire whisky at Lancaster filled the car. There was a slight change of circumstantial evidence in their warble that the "Mikado" had got on his travels in the back counties.

"Frazers!" called the brakeman, sticking his head in the door again. When the conductor came back the traveling man had managed to somersault himself into the acquaintance of the Coatesville girl, and without an auditor the blue and silver gentleman mused on his grievances to Broad street.—Philadelphia Press.

#### A Noble Boy.

One morning last week the engineer of an express train on an eastern road was startled by the sudden appearance on the track ahead of a boy who was frantically waving a piece of red flannel. Interpreting this, of course, as a warning of danger, the engineer instantly whistled for down brakes. Just then the train, which had been going at the rate of 60 miles an hour, turned a sharp curve, and a cry of horror broke from the lips of engineer and fireman, for in the centre of the track, but a few yards ahead, was a large bowlder. In a few seconds the train came to a standstill, the crows' nest almost touching the huge stone.

A few seconds later the boy who had saved the lives of so many of his fellow-creatures was surrounded by the pale and excited passengers, who were listening to the story of the rescue.

"I was walkin' along the track on my way to my Sunday-school teacher's house, when I see that stun on the track," began the little fellow, modestly, and if his grammar was not of the best, no one thought of criticising it then. "I knew this train was pretty near due, an' I made up my mind I'd have ter stop her. So I looked around an' found this here flannel—it's a piece of an old flag, ye see, that some signal man's fired away—an' I run ahead with it—an' that's all there is ter tell."

"You're a noble boy," said an old gentleman, in a voice broken with emotion. "Friends," he added, turning to his fellow-passengers, "this little hero must not go unrewarded."

I am going to pass my hat around for contributions for his benefit, and here is a \$5 note for my share."

Some of the passengers took their departure in considerable haste at this, but many remained, and in a few minutes a heap of coins and crisp bank-notes was thrust into the hands of the blushing and bewildered little fellow. Then the old gentleman who had started the collection handed him a card, saying:

"Here you have my name and address, my lad, and, if you ever need a friend, come to me."

Then, the bowlder having been removed from the track, the train started. The boy watched until it disappeared in the distance; then he sat down beside the track and began counting the money. It was then that five other boys emerged from behind a clump of bushes by the roadside and advanced toward our ex-hero.

"Yer done it bully," said one of them. "How much did yer get?"

"Forty-seven dollars and ninety-five cents," was the reply.

"I'll give you fellers yer share before we go home. Say, don't this lay over pickin' huckleberries an' sellin' 'em for five cents a quart? Well, I should ejackerate!"—Tid Bits.

#### Sunday Trains.

It is gratifying to note that the running of freight and passenger trains on Sunday is perceptibly diminishing. For several years the practice seemed to increase correspondingly with the growth of traffic, which was steady and continuous, in spite of the stagnation in general business which followed the panic of 1873. The running of Sunday trains seemed to be a necessity inseparable from railroad operation, and the religious and church-going portion of the community began to fear that familiarity with the practice would ultimately, so far as railroad employees are concerned, make the week consist of seven working days instead of six. The tendency in this direction, however, seems to have reached its limit, and may be followed by a decided reaction, not so much from a sentiment of religious obligation as from purely business considerations. There are no duties more exacting and arduous, or which more imperatively require sound minds and healthy bodies for their proper performance, than those which devolve upon railroad men of every grade, and especially trainmen.

Whether Sunday is identical with the Sabbath of the decalogue is a question for polemics, but there is no question at all that it is a day of coveted rest from week-day toil, and, as such, is appreciated and enjoyed by almost everybody. Every railroad manager knows that more and better service can be got from an employé in six days, when the six days are preceded and followed by a day of rest, than could be got from him in continuous periods of seven days without any intervals of rest. In justice to managers it should be said, however, that they are powerless to abate the evil of Sunday trains unless sustained by a prevailing public sentiment. Road managers are in this matter as much the slaves of the great exacting public as the train hands are of the managers. It would doubtless comport better with the proper observance of Sunday if all trains except those carrying through mails were suspended on that day. But owing to the immense increase of through and local passenger traffic, this is out of the question; and as regards freight trains, the manager may consider it very wicked to keep them on the move in the busy season, regardless of Sunday, but he must not fall behind his competitors nor disappoint the stockholders.

Public sentiment against the running of Sunday trains does not, in fact, amount to much. The practice is condemned in the abstract by the mass of church-going people, but when these people are asked to withhold their patronage from such trains, the boycott does not very alarmingly affect the receipts. Very few people, in fact, can be found among those who are the most outspoken against this kind of sabbath-breaking who will not readily patronize a Sunday train in any pressing emergency of business or duty, but in such case the patronage will most likely be justified as a matter of unavoidable necessity, but not the running of the train.—National Car & Locomotive Builder.

#### A Collision with a Balloon.

A remarkable occurrence took place at Albion, the other day. A gymnast made an ascension with a balloon, and while he was exhibiting on a trapeze, he drifted across the Central Railway track directly in front of an approaching passenger train. The engineer set his air brakes and whistled, but the balloon would have been struck had not the balloonist, by "jumping" his air-ship, caused it to rise, so that the trapeze barely cleared the smoke-stack of the locomotive, he himself clinging to the ropes hanging from the net.—Syracuse (N. Y.) Journal.

#### Pathfinders.

"It is all very well," said the track-walker, who had fallen through the trestle-work, "to hit the nail on the head; but to hit your head on the nail, he gorra, is quite an intirely different thing altogether."

The new dude picked out a vacant seat beside the only lady in the car, and sat down beside her. "You are not afraid of me, I hope?" he said, sweetly. "Oh no," she replied, kindly, "not at all. I am an attendant in the state asylum for the insane." He looked sorry, but whether it was for himself or the other idiots, nobody could tell.

"I'm going to me brother Mick Casey's," said a woman on a Wabash train to the inquisitive conductor. "But where does he live? What station do you get off at?" "Sorra the wan av me knows. He wraut me to come, and said it was on the railroad he wurked, an' ye'd know where he lives." That was all the puzzled conductor could get out of her, so he went on collecting her fare from station to station, until the train pulled up at a gravel pit to let an express go by, when a burly section hand approached him. "Is me sister, Ann Casey, an board wid you?" he asked. And as the conductor handed out this expected passenger. "Had ye any trouble findin' me?" asked Mick. "Sorra the bit," replied Ann, "the man wid the gold buttons thayre said he didn't know ye, nor where ye lived; but I knowed he was the eye ov him it was only tasing me he was." "Thru for you; it's a born devil he is for chaffin' any one."

"Say," said the postal clerk, who had been off on vacation two weeks, "Say, I lied about that trout I caught down in Maine last week. I was telling you about it last night, you know, and I lied about it." The baggage-man looked awestricken at this revelation. "That's right," he said faintly, "own up; you'll feel better." The brakeman was trying to revive the trainboy, who had fainted dead away, and the conductor looked amazed and helpless.

"Has Sam Jones been running on this train lately?" he asked. "Then he turned to the postal clerk. "Well," he said, "we'll all stand by you and help you, if you have really reformed and are going to try to do better. So you did lie about the big trout, did you?" "Yes," said the R. P. C. with a heavy sigh, "I did, and I'm sorry for it. I made it two pounds and a quarter too light. I said it dressed a pound and three-quarters; it really weighed four pounds." Then an awful silence, such as follows the request for five dollars till payday, came creeping on all-fours into the car, and the conductor went out and told the engineer to slide by all the flag stations about a thousand miles a minute, and maybe they could break that postal clerk's lying neck on a mail-catcher.

—Burdette, in *Pathfinder Guide for October*.



Published Every Friday,  
At 73 Broadway, New York.

#### EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

#### THE DECREASE IN FOOD EXPORTS.

While the value of the breadstuffs exports from this country has fallen off greatly since 1881, and of provision exports also, the value of cotton and petroleum exports has been well maintained. These are the great staple exports of this country, having been from 72½ to 88 per cent. of its total exports of domestic merchandise in the last ten years.

Cotton, which had long been our chief export in value, was exceeded by breadstuffs in each of the four years from 1877-78 to 1880-81, but has had a long lead for the last five years, in which the aggregate value of the breadstuffs was \$838,000,000, and of the cotton \$1,051,000,000. There has been a very large decrease in the total value of our exports since 1881, and it has been almost wholly in breadstuffs and provisions—the productions of Northern farmers. The exports other than those of the four great staples have been quite well maintained.

In millions of dollars the values of each of the four great staples (including live stock with provisions), of breadstuffs and provisions together, of the other exports, and of the total exports, have been for 11 successive years ending with June 30, reduced to gold :

YEAR TO JUNE 30.	Cotton.....	Petroleum.....	Breadstuffs.....	Provisions.....	Breadstuffs and provisions.....	Other natural products.....	Other exports.....	Total.....
1876.....	171.0	29.0	114.8	83.7	108.5	57.9	50.8	525.0
1877.....	159.1	57.5	108.7	113.5	222.2	67.1	83.8	589.3
1878.....	171.0	44.3	171.7	124.1	295.8	61.1	108.6	680.7
1879.....	162.0	40.3	200.2	131.2	340.4	64.6	91.0	698.3
1880.....	211.5	36.2	286.8	148.4	435.2	55.3	85.7	823.9
1881.....	247.7	40.5	236.6	173.2	442.8	63.0	90.1	883.9
1882.....	199.8	51.2	182.0	131.7	313.7	67.5	101.0	735.2
1883.....	247.3	44.9	207.5	120.0	327.2	75.8	100.7	804.2
1884.....	197.0	47.1	162.5	134.7	297.2	72.7	111.0	725.0
1885.....	202.0	50.3	160.4	121.9	282.3	80.4	110.7	726.7
1886.....	205.2	50.2	125.8	103.1	228.9	78.8	103.8	666.0

\* Tobacco, lumber and timber, fruit, oilcake, fish, furs, coal and copper.

For the first four years the cotton exports averaged 164 millions; since then, 216 millions; for the first three years the breadstuffs exports averaged 192 millions; for the next five, 235; for the last three, 150 millions. The fluctuations in provision exports have not been so great, but the course has been similar—a large increase, culminating in 1881, and then a decrease, making the value last year the lowest for ten years, while the average of the last four years, 120 millions, is 18 per cent. less than the average of the four years previous, 146 millions. Rarely has there been such a great development of trade as the increase in the combined breadstuffs and provision exports from 222 millions in 1876 to 443 in 1881, and rarely has there been such a decline as from the 443 millions in 1880-81 to the 228 last year. The growth was uninterrupted, and so was the decline. In both cases prices had much to do with it, but not everything by any means. This rapidly growing country has spared much less food for export of late years than it did from 1876 to 1882, though there has been a large area of new land occupied meanwhile.

We have shown repeatedly that notwithstanding the great number of new farms, grain production in this country has not increased. This year both wheat and corn crops are much smaller than in 1879 or 1880. But on the average the production has been about as large as then, while we see the exports have greatly decreased. The fact is that the consumption of the country has greatly increased, and increased much faster than its production of food. The population which had enough from the production of 1880 to spare the value of \$448,000,000 for export was 50 millions; that which spared \$229,000,000 worth from the crop of 1885 was about 58½ millions. If we divide the \$215,000,000 decrease in exports by the 8,500,000 addition to the population, we have about \$25 each. This is doubtless a large allowance for the average individual consumption of wheat, flour, meat, butter, etc., but the decrease in quantities exported has not been in proportion to the decrease in values, owing to the lower prices.

This increase in population, and consequent great increase in home consumption, has had a profound effect on traffic. The movement to the seaboard has become comparatively much less important than it was; the interior movement much more important. The flour and provisions, which a few years ago would have gone abroad, are distributed all over the country, but chiefly over that part of the country east of the Mississippi, where industries other than agricultural prevail. The growing prosperity of the South also has probably increased the consumption of Northern breadstuffs and provisions.

What we have given under the head of "other natural products" includes products of the soil raw and with slight changes by manufacture. The chief of these are lumber and tobacco; those which may be counted as agricultural produce, tobacco, fruit and oil cake, have varied comparatively little in value, but were more last year than ever before, namely, 40.8 millions, chiefly on account of larger tobacco exports; for the last five years their average value has been 33.2 millions; for the five years previous, 32.7; so that they cannot be said to have grown; but there has been a considerable increase in coal, copper and lumber.

Most of what is given under the head of "other exports" are manufactured goods, but not all. Last year, of the 103.8 millions 16.8 millions were "natural products"—28 different articles, chief of which were naval stores, hops, animal and vegetable oils, and seeds. The exports of these in 1876-77 were 20.8 millions, so that there is no indication of an increase in these. There is a great gain in these "other exports" since 1876 and 1877, but it was made all at once, from 1876-77 to 1877-78, having been 108.6 millions in the last named year, and having averaged 100.3 millions for the last nine years. From what has been said before it is evident that the gain has been wholly in manufactures; and examination shows that the values of the exports of the chief of these, namely, agricultural implements, manufactures of iron (including machinery), cotton goods, leather, chemicals, spirits and sugar, have been for 10 years, in millions of dollars :

This accounts for rather more than half of what we have given as "other exports"; products of the soil or simple manufactures of them make from 15 to 20 millions more, and this leaves us last year with 26 millions of manufactures other than those specified against 19.8 in 1876-77, showing an increase in total manufactured goods from 63 millions in 1876-77 to 87 millions last year—38 per cent.

This is a large percentage of gain, but the amount of gain is small compared with the total exports. It serves to illustrate, however, the fact indicated by the decrease in food exports, namely, that population has grown much faster than agricultural industries; for though the increase in exports of manufactures has not been very great, it has been made at a time when the exports of Northern farm products were decreasing greatly, and when imports were decreasing. For these latter have been, in millions of dollars :

Year to June 30.  
1877. 1878. 1879. 1880. 1881. 1882. 1883. 1884. 1885. 1886.  
451.3 437.1 445.8 608.0 642.7 724.6 723.2 667.7 577.5 635.4

There were 50 millions of people to consume the 668 millions worth of foreign goods in 1880-81, and 58½ millions to consume the 635½ millions last year. At the same rate per inhabitant as in 1880-81 the imports last year would have been 752 millions. The average value of goods consumed per inhabitant doubtless was smaller last year, because prices were lower, but nevertheless, there must have been a large increase in manufactures to make up for part at least of the decrease in imports.

The general result is a more general distribution of

the products of the soil, and especially of food, in this country, and a reduction of the movement to the seaboard, which is shown very clearly by the difference between the total eastward movement of freight and the seaboard receipts. The latter have fallen off greatly since 1881; but the total movement eastward from the western termini of the eastern trunk lines even, has been much better maintained, showing a great increase in consumption even in the interior of New York, Pennsylvania, New Jersey and New England. But the chief increase in population and food consumption has been further west, so that Ohio, Michigan, Illinois and Wisconsin are consuming more and more of their own grain and meat, and even import from the states west of the Mississippi; and even in the first tier of states west of the Mississippi the growth of the town population has been so much greater than the growth of the farm population that they probably have less to send to market now than they had six years ago. This is becoming an industrial country, and the traffic between such traffic centres as Chicago and St. Louis in the West and the seaboard cities in the East is not growing, or is growing slowly, and the interchanges between these and other places in the West with interior towns in the East, and probably still more with those north of the Ohio River, and also in the South, are increasing greatly. Just what the effect on transportation is we cannot know without more definite data as to the interior traffic. The hauls are shorter than those to and from the seaboard, but many of them are long hauls. A few years ago the rates would have been higher and more easily maintained on the interior traffic; but it is doubtful if that is true any longer; the greater part of this traffic is likely to be carried at trunk line through rates, except where the hauls are quite short. There is, however, a great increase in the short hauls, especially of farm produce, and of travel. The capital fact is that the through traffic has become a decidedly smaller proportion of the whole.

#### The New York Central's Last Fiscal Year.

The New York Central directors in making a dividend for the quarter last week, issued a statement, with September partly estimated, of the income account for the fiscal year ending with September—which has never been done before. The West Shore was included only for the last three quarters of the last year, which makes the comparison with the previous year of comparatively little value.

For the increase of \$6,070,559 in gross earnings and of \$2,653,628 net were, of course, largely due to the West Shore: the result in the profits of the company, however, is the capital fact; and we find that with an increase of \$1,316,274 to the interest and rentals, there was an increase of \$2,000,658 in the surplus available for dividend, which was \$4.79 per share of stock, against \$2.43 the year before. This is certainly a great improvement, but the comparison is made with the worst of years, when the two roads which are now united were doing their worst to destroy each other's profits, and succeeding in it.

The gross earnings of the two roads were less than those of the New York Central alone in each of the four years from 1879-80 to 1882-83, and less also than in 1873-74, and the net earnings of the two last years were exceeded by those of the New York Central alone in every year but one from 1874 to 1883, inclusive, while the profit per share (owing to the increase in fixed charges to pay the rent of the West Shore road), though nearly twice as great as the year before, was less than in any other year. In the 14 years from 1870 to 1883, inclusive, this profit per share fell below \$8 but twice, having been \$7.67 in 1870, \$7.76 in 1877, and \$6.42 in 1882, and the average for these 14 years was \$8.78. Even in 1884 it was \$5.22.

The last year was not wholly a favorable one, but traffic was remarkably large in the first quarter of it, and also large in the last quarter, and rates were better maintained than in most years.

To make the comparison so far as possible between the systems as they now are, we have added the earnings and expenses, etc., of the West Shore for the first nine months of 1885 to those of the New York Central for the same time, and placed them by the side of those reported by the New York Central for the united roads for the corresponding nine months of this year, as follows:

	1886	1885.	Inc or Dec.	P. c.
Gross earn.....	\$23,623,398	\$20,261,280	+\$3,362,118	16.6
Expenses.....	4,837,791	15,852,433	-1,014,642	6.4
Net earn.....	\$8,785,607	\$4,408,847	+\$4,376,760	99.3
Prior charges.....	5,783,000	4,891,319	+\$891,681	18.2
Surplus.....	\$3,002,607	.....	+\$3,485,070	.....
Deficit.....	.....	482,472	.....	.....

The increase in the gross earnings of the combined roads for the nine months is not so very great as might have been expected, being just about one-sixth, while

for the eight of these nine months reported the Pennsylvania gained 16 per cent. in gross earnings and the Erie 19½ per cent., and neither of these suffered in 1885 from the great reduction in local rates as the Central and the West Shore did, so that neither had so much to gain by their restoration, which followed the union of the two roads. The reduction in working expenses is less than 6½ per cent.; yet the effect of the increase of one-sixth in gross earnings and of the decrease of one-sixteenth in working expenses is an increase of very nearly 100 per cent. in the net earnings of the two roads. This is because the net earnings were so small in 1885, the West Shore having a deficit of more than a million in the nine months.

When gross earnings are 100 and expenses 99, it does not take much improvement to double the net earnings. It was not quite so bad as this with the West Shore and the New York Central last year, but it was something like it, the working expenses of the two roads taken together having been 78½ per cent. of the earnings, against 62½ this year.

The increase in fixed charges was less than one-fifth of the increase in net earnings. These charges exceeded the net earnings last year without taking into consideration the unpaid interest on the West Shore bonds, for the New York Central itself in these nine months earned but \$800,000 more than its prior charges, or 90 cents per share, and the West Shore's deficit largely exceeded this. Thus, while the surplus available for dividend from the two roads was \$3,485,000 more this year than last, it was still only \$3,002,600, which is \$3.36 per share of New York Central stock, rates being better maintained than usual throughout the nine months, but traffic not having been very good in the first six of them.

These nine months, however, are not average months. One of the best quarters of the year is usually the last one, not included above. In it last year, rates not being fully restored for several weeks, the New York Central alone earned \$2,741,393, while the average of the two roads together for the nine months following has been but little greater—\$2,928,536; and the New York Central's surplus for the last quarter of last year was \$1.43 per share, against an average of \$1.12 from both roads since.

There is, however, one very encouraging fact shown by last week's report, namely, the result in the last quarter of the year. We compare it below with the result on both roads last year and in 1884:

	1886.	1885.	1884.	More or less than in 1885.	P. c.
Gross earn...	\$8,708,000	\$7,153,346	\$8,463,937	+\$1,552,654	21.7
Expenses...	5,241,000	5,713,059	5,930,083	-472,059	8.3
Net earn...	\$3,467,000	\$1,442,287	\$2,533,854	+\$2,024,713	141.7
Prior charges...	1,929,000	1,581,463	1,657,987	+344,537	21.2
Surplus...	\$1,541,000		\$875,867	+\$1,080,176	
Deficit...		\$139,176			
Per share...	\$1.72	\$0.18	\$0.98	+\$1.90	

The comparison with last year shows little more than the difference between the worst possible condition of things and the present condition, for that was the most unprofitable quarter the New York Central has ever had, the surplus over its fixed charges being only \$89,482, or just 10 cents per share, against 27 cents in the previous quarter and 53 in the first quarter of 1885. By an increase of 21.7 per cent. in gross earnings and a decrease of 8.4 per cent. in working expenses, the net earnings of the two roads were increased no less than 142 per cent., and the surplus over fixed charges was no less than \$1.72 per share, in what is not usually the best quarter of the year. The comparison with 1884 is more instructive, the demoralization of rates consequent on the competition of the new road not having become general then, and the West Shore not being completed. The gross earnings this year were not 3 per cent. greater than then, but the net earnings were \$933,000 (37 per cent.) greater, the West Shore having made but a trifle then (\$87,397). The profit per share of the New York Central alone in that quarter was \$1.12, against \$1.72 this year from the united roads. Only once since quarterly reports have been made was the profit per share larger than in the last quarter, namely, in the last quarter of 1883, when it was \$2.05. That was a very favorable time, and the prior charges were then about 60 cents per share less than now.

Gross earnings are not always larger in the last quarter than in the third quarter of the year. Both the Pennsylvania and the Erie earned more in the third quarter than in the fourth in every year since 1880 except last year, and the New York Central did in 1884, the first year in which it reported. There is, however, a very good traffic now, and though there probably will not be so much carried as in the last quarter of last year, the rates are so much better than they were on some of the traffic then—not having been fully restored on through passengers and west-bound freight last year until near December—that larger net

earnings ought to be made. The New York Central made \$1.42 per share then; but its net earnings will have to be \$450,000 greater to make as much this year, owing to the larger fixed charges. It has the West Shore to make it with, however, and it will not be surprising if the increase is more than that.

#### September Earnings.

Of 30 railroads reporting September earnings all but four earned more this year than last, but most of them made smaller gains than in August, but this is because September was a better month than August last year. The roads reporting a decrease were the two Buffalo lines, which depend largely on the bituminous coal trade, the Central Iowa, which seems to be generally persevering in not doing well, and the Detroit, Lansing & Northern. The aggregate earnings of the 30 roads were:

	1886.	1885.	Increase.	P. c.
Earnings.....	\$15,859,329	\$14,090,917	\$1,768,412	12.6

This is a very large gain, and it is made in comparison with a quite favorable year, for the 84 railroads reporting for September last year earned only 1 per cent. less than in 1884, though the 79 reporting in 1884 earned 6½ per cent. less than in 1883. The course of September earnings is best shown by the following statement of them for five years, however.

The four roads northwest of St. Paul have earned:

	1882.	1883.	1884.	1885.	1886.
Can. Pac. ....	\$274,257	\$494,000	\$639,840	\$826,000	\$963,000
North. Pac. ....	772,838	1,194,714	1,336,560	1,224,655	1,461,400
St. P. & D. ....	120,214	142,878	152,143	172,575	204,046
Manitoba. ....	834,617	754,473	738,587	740,845	833,397

The Northern Pacific and the St. Paul & Duluth, as was indicated by the great wheat receipts at Duluth, have made great gains, the Northern Pacific 19 per cent., and the St. Paul & Duluth 18 per cent. They never before have earned so much in September. The Manitoba gains 11 per cent., and earned more than before since 1882, though the wheat crop is reported to have been especially poor on its lines. It gained 19½ per cent. in August, which was before the wheat began to move much. The Canadian Pacific's gain is not remarkable, being 16½ per cent.—less than the Northern Pacific's.

Lines west and northwest of Chicago have earned in September:

	1882.	1883.	1884.	1885.	1886.
Ill. & North. ....		\$9,040	\$46,338	\$46,299	\$59,091
W. L. S. & W. ....	\$83,012	98,249	99,208	144,805	312,600
Chic. Mil. & St. P. ....	1,950,710	2,220,684	2,201,241	2,273,277	2,555,000
Chic. & N. W. ....	2,533,041	2,647,908	2,346,914	2,552,324	2,687,200
C. St. P. & M. ....	522,200	521,492	527,884	600,905	618,800
O. & O. ....	112,524	151,513	149,959	142,636	128,973

The Milwaukee & Northern's gain is made without increase in mileage, but in spite of the large percentage of gain this year it earned only \$264 per mile. The Milwaukee, Lake Shore & Western has added to its mileage every year, but the increase in mileage over last year is but small, while the increase in earnings is 116 per cent., due chiefly to the great development in the iron ore shipments for the new Gogebic district. Its earnings in September were much larger than in August even, and at the rate of \$585 per mile, while the old Northwestern earned but \$680, and the Milwaukee & St. Paul \$517.

The Milwaukee & St. Paul earned \$281,733 (12½ per cent.) more than last year, when it earned more than ever before. The Chicago & Northwestern earned \$134,876 (5½ per cent.) more than last year, but only \$39,282 more than in 1883, with a considerably smaller mileage. The Northwestern has gained but \$134,159 (5½ per cent.) since 1882, while the Milwaukee & St. Paul has gained \$604,290 (31 per cent.) in that time. The increase in mileage has been about the same in both systems. The St. Paul & Omaha gains but 3 per cent. over last year, but it earned more than ever before. These three great roads northwest of Chicago, last named, together earned \$434,500 (8 per cent.) more than last year in September and \$621,900 (15 per cent.) more in August. The gains, therefore, are less than they have been, but that is not because of any decline of earnings this year, but because earnings began to improve last year in September. In that month these three roads earned \$350,467 more in 1885 than in 1880, while in August they earned \$158,085 more in 1884 than in 1885.

Further south west of Chicago earnings have been as follows:

	1882.	1883.	1884.	1885.	1886.
Chic. & Alton ....	\$912,992	\$934,945	\$916,964	\$755,825	\$770,124
Peoria, D. & Ev. ....	68,105	73,650	74,636	78,854	89,954
St. L. & San Fran. ....	339,504	383,082	492,943	398,610	488,500
Denver & R. G. ....	599,191	666,669	521,957	563,396	627,536

Southwest of Chicago the traffic has been less favorable, if we may judge by the Chicago & Alton, for though it earned a little more than last year in September, it earned much less than in any of the three previous years—from 15½ to 17½ per cent. less. The St. Louis & San Francisco, still further south, having considerable increase in mileage, earned

23 per cent. more than last year, but only 5½ per cent. more than in 1884. The Peoria road earned more than ever before, and the Denver & Rio Grande more than ever except in 1883, when the Denver & Rio Grande Western earnings were included.

Other lines east of the Mississippi and north of the Ohio report:

	1882.	1883.	1884.	1885.	1886.
Chic. & E. Ill. ....	\$172,215	\$158,226	\$153,874	\$169,714	\$170,682
Cin. L. St. L. & C. ....	265,944	249,886	250,988	219,256	248,275
Ohio & Miss. ....	462,779	477,729	357,152	368,816	466,984
Det. L. & M. ....	199,402	156,036	120,799	117,899	109,787
Cin. Wab. & B. ....	201,929	215,092	186,055	152,685	203,710
Wabash. ....	1,682,382	1,737,182	1,427,875	1,339,000	1,211,000

All but one of these roads earned more this year than last, but all have earned less this year than in some one of the previous five years, though comparisons with the Wabash before last year are valueless, because it was working more than 3,500 miles then, and only 2,150 now. The Eastern Illinois earned nearly the same as last year and a little less than in 1882, but much more than in the other two years; the Cincinnati, Indianapolis, St. Louis & Chicago earned more in every year except last year; the Ohio & Mississippi has increases over the last two years, but decreases about as large from 1882 and 1883. It and the Cincinnati, Washington & Baltimore are benefited largely by the better through rates (which were at their lowest in September last year) and the larger winter wheat crops. The gain of the Wabash over last year was less than was to be expected in view of these facts, and not half as great as its gain in August and but one third as great as its gain in July.

The other roads which have reported for more than two years earned in September:

	1882.	1883.	1884.	1885.	1886.
B. N. Y. & P. ....	\$223,808	\$238,398	\$234,500		
Buff. R. & P. ....	\$12,502	\$83,301	109,026	133,431	118,805
Long Island. ....	267,706	285,829	313,304	315,788	330,255
Louis. & Nash. ....	1,114,513	1,334,179	1,145,366	1,146,904	1,267,413

The Long Island earned 4½ per cent. more than last year and more than ever before; the other two Eastern roads earned less than last year, but more than in previous years. The Louisville & Nashville earned 10½ per cent. more than last year and more than in any other year except 1883.

#### New York Shipments in September.

The trunk line through shipments of freight from New York to the West (to points as far west as their western termini at Buffalo, Pittsburgh, etc.), in September were much less this year than last, but they compare favorably with those of most other years, having been for seven years, in tons:

	1880.	1881.	1882.	1883.	1884.	1885.	1886.
	99,480	141,174	115,056	102,192	106,810	127,195	107,182

The shipments were made exceptionally large last year in September by the extremely low rates, and by expectation and finally by formal notice of an advance, while at the same time there was an important revival of trade. The decrease of 20,000 tons compared with that year is not, therefore, remarkable or unfavorable. The shipments were nearly the same as in 1884. In 1881, when this year's receipts were very largely exceeded, war rates prevailed, about one-third less than the present rates, and in 1882 rates were considerably lower than now. The shipments, however, do not indicate any unusual activity in trade. Doubtless, the shipments by canal are much larger than last year, but it is not apparent why they should be larger than in other years when rates were maintained. There are also shipments by steamboat to New London, and thence by the New London Northern and the Grand Trunk, by steamer to Newport News or Richmond, and thence by the Chesapeake & Ohio, and directly by the Lehigh Valley, which are not included above, and together may be as much as an eighth of those above reported, and probably more than last year, though these routes continued to get a share of the traffic then in spite of the very low rates by the other lines.

The shipments of "cotton piece goods" under the new tariff have been very much less, from New York at least, than was expected, amounting in September to about 3,650 tons, or less than 3½ per cent. of the total shipments, while the shipments of first-class freight were 25,200 tons. Thus the indications are that these goods formed but about one-eighth of the total first-class freight. The cotton piece goods are also a very small part of the shipments from Philadelphia and Baltimore. From Boston and interior New England points they may be more important.

The Baltimore & Ohio took no freight from New York from Aug. 10 to Oct. 4. It has now resumed shipping by the Bound Brook Line to Philadelphia, but it probably will not report its business, as it appears there is a difference of opinion as to whether its suspension took it out of the pool. It is contended on one side that it must now be admitted as if it now first entered New York. No present trouble is anticipated, however, the Baltimore & Ohio apparently

When one lights on such cock-sureness in so abstruse a subject as the ultimate capacity of metal in trusses, it is not to be expected that such little questions as the proper kind of train brake and automatic coupler would be found to offer much difficulty, nor do they. The report on automatic brakes is substantially a compilation from the last of the Brake Commit-

*Bradstreet's* also reports the stock of flour on hand, which has increased 570,194 barrels (= 2,566,900 bushels of wheat) since July and is 482,000 barrels more than last year at this time; but the amount in hand in the West is only about equal to two weeks' shipments thence, and will not

The words we have italicized make it entirely clear that here was a derailment which occurred almost immediately before reaching the bridge, under circumstances where no railing safety frogs have, in dozens of instances at least, put the wheels back upon the track and saved both the train and the bridge. Several patterns of safety frogs for this purpose, we believe, have been devised, the original of all being that devised by Charles Latimer many years ago, some thousands of which are now in use. It costs little; it does not wear out; there is absolutely no expense for maintenance, and to the best of our information and belief it is invariably effective in its purpose when struck by a derailed wheel not more than 2 ft. 3 in. out of place.

When we come to such expensive and complicated safeguards as freight train brakes, automatic couplers, block signaling, interlocking and so on, reasonable men look with some degree of patience on slow progress, if there is only some progress. There are many pros and cons to be considered, and a great expense as well. But a very large proportion of the more serious derailling accidents, *i. e.*, of those which happen in localities which threaten to make them serious, can be saved at the merely nominal cost of laying down once for all these cast-iron watchmen and then letting them alone—to do their work if occasion comes and to cost merely a few cents a year for interest until the occasion does come, as it is likely to sooner or later, for every one of them. This being so, they are far too little used.

#### Railroads in Sweden.

Sweden waited long for a railroad. Capitalists did not find the field attractive, and when at last a beginning was made, in 1854, it was by the state itself; but this seems to have started private capitalists, who opened a few miles in 1856 before the state had completed any of its own road. Progress was not rapid afterward, but it was pretty steady. It was not till 1867 that there were a thousand miles of railroad in the country; but at the close of 1885 it had 4,281 miles, 1,483 miles of which were state roads. The government has built some railroad every year since 1870, but generally less than the companies; but until 1874 there was more state than private railroad. But in 1874 the private railroad mileage was more than doubled, increasing from 578 to 1,182 miles. The companies have 84 different lines, and the largest company system has but 302 miles of road. No less than 36 of the company roads are of narrow gauge, including 858 miles, of six different gauges—3 ft., 3 ft. 6 in., 3 ft. 4 in., 4 ft., 32 in., 3 ft. 7½ in. and 3 ft. 11 in.

The average traffic last year was equal to 61½ passenger and 88½ tons freight carried each way daily over the whole system—a light traffic, especially of freight. The gross earnings were about \$10,500,000, about 33 per cent. from passengers and 65 per cent. from freight. This is about \$2,560 per mile of road. The working expenses absorbed 56 per cent. of the earnings, leaving net \$4,529,200, or \$1,105 per mile of road—an extremely small amount. But the average cost of the railroads has been but \$28,510 per mile.

The least productive railroads have been left for the companies to build, which is not usually the case. Their roads earned last year but \$1,878 gross and \$956 net per mile; yet their rate of profit was greater than that of the state lines—4 per cent. on their capital, against 3.46 per cent. Yet some lines make good profits. One made 15.02 per cent., another 13.71 and a third 12.69 per cent. The cost of the private roads has been on the average only \$23,672 per mile, while that of the state roads has been \$41,435 per mile—the latter a small cost.

Those who are interested in the course of the stock market have doubtless wondered much over the rapid rise in New York & New England, and have been in much doubt as to which of the many theories propounded to adopt in accounting for it. We therefore volunteer an explanation, concerning which we shall only say that it is as well founded as others which are industriously circulated.

The purchases of New York & New England stock, we suggest, have not been, as has been conjectured, made for the New Haven, the Boston & Albany or the Manhattan Elevated, but solely for the Martha's Vineyard Railroad Company, and are but part of a wide-spread and effective scheme now almost approaching completion. That company has secured already control of the Atchison, Topeka & Santa Fe and the Chicago & Northwestern; it has arranged to buy the Wabash from the Purchasing Committee, the Chicago & Alton from its stockholders and the Nickel Plate from the bondholders; it has nearly concluded negotiations for the lease of the Erie (to which the New York Central may be added, with a 10 per cent. guarantee), and the rumors—heard as yet only in dark and secret corners—that Messrs. Huntington and Stanford have sold it a controlling interest in the Southern Pacific Company, are not without foundation. The purchase of the New York & New England alone was needed to complete the projected system, when some rumors of what was going on leaked out, and the stock was put up at once.

As soon as the purchase of the New England road is completed a branch will be built from Dedham to Wood's Holl; from that point enormous ferry-boats will transfer trains to Oak Bluffs for the present, although a contract has already been let to the Grand Consolidated Bridge Company for a huge cantilever bridge over Vineyard Sound, and the traffic of the continent will soon be concentrated upon the tracks of the Martha's Vineyard Railroad. Rapid transit between New York and Boston will be provided for by a system of powerful ferry-boats, able to transfer whole trains from South Beach to Sag Harbor, whence they will be taken over the Long Island road, giving passengers the benefit of a sea voyage and also a chance to analyze the myriad odors of Hunter's Point.

The plans of the company, however, do not stop on this side of the water. Extensive docks will be built at Edgartown, where in a few months the wheat of the northwest, the live-stock of the great plains, the oranges of Southern California, the New York dude and the Boston Anglomaniac will together take passage for Liverpool on new ocean steamers, built especially for the service and warranted to make the passage in four days—or more.

This explanation is very much fuller and more complete than any yet published in the other newspapers. If our

readers do not accept it, we can only suggest that they construct one for themselves.

A fifth competitor will appear in the supplementary trials of freight train brakes to be held in April, 1887, the Ward Axle Brake & Coupler Company, of Monongahela City, Pa., having applied to Chairman Rhodes, of the Committee, for entry to the tests.

An extraordinary miniature locomotive, which is doubtless the most perfect one ever built, is now on exhibition at the American Institute fair in New York, having occupied all the spare time of Mr. F. Van Fleet, of Williamsport, Pa., for 2½ years in making it. Mr. Van Fleet is a young man connected with an art store, and not a professional mechanic, but he certainly would seem to possess mechanical aptitude worthy of cultivation, since his miniature locomotive is not only a perfect working model of the minutest details of a working locomotive, but contains some original features, especially in the steam reversing gear, which seem ingenious and meritorious.

The total length of the engine and tender is 19 in., being built to a scale of ½ full size. It burns either oil, coal or coke (although alcohol is preferred), and weighs about 15 lbs. The weight on the drivers is not stated, so that its tractive power cannot be computed, but the cylinders are ⅝ × ⅝ in., with steam ports ⅜ × ⅝ in., and the boiler is warranted to carry 125 lbs. of steam, as indicated by a working steam gauge ⅝ in. in diameter. The boiler is provided with an extended smoke-box of modern design in all its details, and the grate area is 2¼ in. × 1½ in., which may seem limited, but is in due proportion. That it is a flue instead of a tubular boiler is the only serious divergence from an exact copy of a locomotive.

The most marvelous thing about the engine, perhaps, is the Westinghouse brake-gear, which may be used either automatic or straight, and is on both drivers and tank. The air pump complete is 1½ in. × ⅝ in., out to out dimensions; the driver brake-cylinder ⅝ in. × ⅝ in., and the engine triple valve, which is a perfect working valve, as is also that on the tender, is ⅝ in. high, with a bore of about ⅝ in. A practicable injector of the standard Pennsylvania pattern is 1½ in. long, and the blow-back safety valve is ⅝ in. diameter. Both pop and lever safety-valves are provided, the steam being discharged into the smoke-box by the proper hollow knitting-needles, as is also the exhaust of the air pump. The steam reversing gear seems worthy of a separate description, as also the tender coupler, which is on a positively new principle and highly ingenious in its way. We are pleased to note that it is not proposed to introduce this new coupler in a working scale, although it is far more worthy of it than some we have examined. The valve and running gear are in almost every detail like the large-sized original, including a spring counterbalance for the links, which seems hardly necessary for their weight.

From a certain point of view, it is an enormous waste of time to construct such a toy, but it is, at least, a more rational and profitable recreation than many of those which young men favor, which use up quite as large a fraction of 2½ years, without leaving behind them any residuum of mechanical knowledge and skill.

A statement in the interesting account of the construction of the Vosburg tunnel, which appears in another column, is worthy of more than passing notice, *viz.*: that in the whole progress of the work not a single man was either killed or injured from the use of powder, and that after four falls had occurred of the exceedingly treacherous roofing to indicate the necessity of appointing an inspector to look after that matter only, no accidents occurred from that cause either. The contrast in that respect with the fearful death-roll at the new aqueduct tunnel at New York is notable, and indicates that such immunity is not secured without care and good management. Considering that the tunnel had to be arched throughout, was pushed through rapidly and was in such treacherous material, the cost of it likewise (about \$180 per foot) cannot be considered as high. Altogether, the record presented appears to be one of an emphatically well-conducted work on the part both of the engineers and the contractors.

A correspondent asks what thickness and weight of pipe are used in replacing the wooden box culverts of the Chicago, Milwaukee & St. Paul Railway which we illustrated in our issue of May 14, 1886. The pipes are cast at the company's shop of any kind of old scrap and with a simple bell mouth merely large enough to hold the pipes in line with each other of the following sizes:

Inside diam.	Weight per ft.	Thickness.	Wt. per ft. per sq. ft. area.
20 in.	115	⅝ in.	33.0
24 "	175	⅝ "	34.8
30 "	240	⅝ "	36.6
36 "	320	⅝ "	38.3
42 "	400	⅝ "	39.6
48 "	510	1 "	43.4

With the metal from which these pipes are made not worth on the ground more than \$10 to \$15 per ton, and with foundry facilities which must be kept going any way, this will be seen to be not a very expensive way of making a culvert. We have added a column, giving the weight of the culvert per square foot of area, which brings out this fact more clearly when it is remembered that an iron pipe will discharge nearly if not quite as much water as a rough rectangular stone culvert which would inclose it. It is likewise to be remembered that it is safe with a well-built iron culvert, and hardly so with a stone culvert, to let the water back up so as to discharge under a head, as a correspondent points out in another column, which heavily increases the possible discharge.

Well-built stone culverts ought to last almost for ever, but

they do not do so to any large extent, and with the increasing cheapness of iron there is an increasing tendency to use iron, even for large structures. We have some drawings of circular iron culverts of 8, 10 and 12 ft. diameter now in the engraver's hands.

An incident which well illustrates how narrow is the margin between safety and danger in bridges, however strongly they are proportioned, happened a few days since on one of our leading lines. Two men riding on the caboose of a freight train of ordinary length and weight had chanced to jump off just as the caboose was entering a bridge only a few years old, and supposed to be amply strong, the head of the grain, of course being already over it. By a fortunate accident, they noticed that the caboose "bobbed up and down" on the bridge in a very peculiar manner, and by a still more fortunate accident they were intelligent enough to see that this meant something wrong, and to go out and look for it.

They found that a solid 15 in. floor beam had broken clean across right in the middle, but had been held up by the lateral bracing so that it was barely able to get one train over in safety at least. Whether it would have carried another will never be known, as the two men started in opposite directions, and each flagged a train, one of them being a fast express.

Possibly it might have broken just the same had it been an 18 in. beam, but it needs no argument to show how vastly the danger of such fractures—which can never with any care be removed altogether—is increased by permitting bridges to be proportioned for skimpy rolling loads, as most bridges—in fact, nearly all bridges—are to-day.

There was a very large falling-off in the total Northwestern grain receipts in the week to Sept. 25, which extended to the three leading grains, the total receipts then being the smallest since the middle of July. For five weeks these receipts had been, in bushels:

Aug. 28.	Sept. 4.	Sept. 11.	Sept. 18.	Sept. 25.
8,637,066	9,881,775	8,834,275	8,203,497	6,826,794

There has all the time been reason to expect a moderate fall movement, because the winter wheat, which was a fair crop, came forward early and freely, the spring wheat was a light crop, and this year's corn crop will be so poor that comparatively little of last year's surplus can be spared. But the spring wheat, like the winter wheat, has come forward with unusual rapidity and unusually early, and in spite of the poor prospects for corn the receipts of that grain have been large until recently. But now the receipts have become moderate, and it will not be surprising if they remain so. There are large accumulations of wheat at the Northwestern markets, however, and shipments may continue large. These have at no time been remarkably large this season, the largest in a single week having been 5,907,000 bushels, and the average since July 5, 256,700; while for the season since July 10, after which the new winter wheat began to come forward, the shipments of the Northwestern markets have been 54,495,000 bushels, while their receipts were 85,497,000. Last year there was no such difference between the receipts and the shipments, but the heavy grain movement then began a month later. In the eleven weeks after it did begin, from Aug. 9 to Oct. 24, the Northwestern receipts last year were 70,469,528 bushels and the shipments 57,317,585. Thus these markets have received during the height of the grain movement 15,028,000 bushels more this year than last, but have shipped 2,822,000 less.

The stocks at harvest time, however, were very large last year and quite moderate this year, so that they are not now so much larger than last year as the great excess of receipts over shipments would lead us to suppose.

The shipments by rail, which were light all summer, have been large since August, though, of course, not so large as last year in September, when the rates were the lowest ever known. There has been some cutting of rates this year, but it has not amounted to much, because the demands of local traffic have made it difficult for most of the railroads to supply cars enough. Oats still form the larger part of the rail shipments, though other grain is taken in greater quantities than heretofore. About half the flour goes by rail, but in the week to Sept. 25 less than one-tenth of the wheat and one-fifth of the corn, but 96 per cent. of the oats, and more than three-fourths of the barley.

The accumulation of wheat at Northwestern markets at this season increases the probability of a good winter movement by rail. It is noticeable, however, that a very large amount has accumulated at Duluth, which rarely ships by rail. The 32,000,000 bushels of wheat in Western elevators are likely to be increased rather than decreased by the close of navigation. Wheat has been going forward recently at the rate of 1,600,000 bushels per week, and it would take 20 weeks to empty the elevators at that rate, while but eight weeks of navigation remain, and the smallest receipts in any recent week have been 2,835,000 bushels. The receipts may decrease, and very probably will, and it is possible that wheat shipments will increase, taking the place of corn shipments. So far, however, corn shipments have not decreased, though corn receipts have. No change is likely to occur which will leave the stock of wheat in Western elevators less at the close of navigation than it is now; it may be larger by 10,000,000 bushels even, but probably not smaller. This, however, does not insure a heavy winter movement by rail. That will depend on the market. If prices are unsatisfactory a very large part of the wheat will remain in store until navigation opens in the spring.

Corn receipts at the Northwestern markets have fallen off quite as noticeably as wheat receipts. They averaged 2,500,000 bushels a week for the three weeks to Aug. 28,

reached their maximum for the season the next week, and have fallen off rapidly since, having been for four weeks:

Week ending—			
Sept. 4.	Sept. 11.	Sept. 18.	Sept. 25.
3,373,486	2,830,533	2,213,339	1,728,009

The very light crop in Illinois and the states further west is likely to make the shipments moderate hereafter.

The receipts of grain at the Atlantic ports have not kept pace with the Northwestern receipts, the direct shipments from interior points to the seaboard having been much smaller than in some previous years, evidently. Thus for the eleven weeks from July 11 to Sept. 25 this year, the Atlantic receipts were but 54 million bushels, while the Northwestern receipts were 85½ millions. In successive years these receipts have been for the 11 weeks, in millions of bushels:

Receipts.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
Northwestern	82.0	73.3	61.8	73.0	64.5	58.3	85.5
Atlantic	82.2	61.9	52.7	47.5	40.5	41.5	54.1

Excess, N. W. .... 11.4 9.1 25.5 24.0 16.8 31.4

The receipts at the Northwestern markets for the period were larger this year than in any other since 1881, and 30 per cent. more than last year, when the movement was favored at this season by extremely low rates, both by rail and water. The increase in receipts in Northwestern markets has been 47 per cent., and it is one-third greater than in 1884, when the wheat crop was the largest ever known.

It is, however, noticeable that the Atlantic receipts were somewhat larger this year than in any other since 1881, and 30 per cent. more than last year, when the movement was favored at this season by extremely low rates, both by rail and water. The increase in receipts in Northwestern markets has been 47 per cent., and it is one-third greater than in 1884, when the wheat crop was the largest ever known.

The summer packing of hogs has continued to be unusually large, the number at the eight leading packing points having been 4,271,552 this year, against 3,575,943 last, from March 1 to Sept. 22, an increase of 695,609, or 22½ per cent. Last year the number packed at all points in the Northwest for the whole season (to Oct. 31) was 4,853,379, and at the rate the increase has been at the places reported, it will be 5,945,000 this year. The largest number heretofore in the summer season was 5,323,898 in 1880. The new corn crop is so light that it is very likely that the packing for the unreported six weeks of the current season will not be greater than last year, however, or even will be less.

The most notable increase this year has been at Kansas City, from 660,000 to 813,362, or 23¼ per cent. The amount of increase at Chicago is larger—215,000—but this is only 10½ per cent. No other place packed half as many as Kansas City. St. Louis, Indianapolis, Milwaukee and Cincinnati together packed only about as many. The gain at Indianapolis is 101,000 (70 per cent.), at St. Louis 110,000 (55 per cent.), at Cedar Rapids 46,700 (31½ per cent.), and at Cleveland 53,500 (47 per cent.). At Milwaukee, and Cincinnati the gains are very small.

Of the Northern Pacific's great gain in gross earnings last August (\$255,069) only two-fifths went for increased working expenses, leaving an increase of \$152,244 (30 per cent.) in net earnings—more than the company's entire surplus over fixed charges last year. For the two months of its fiscal year ending with August, it has a gain over last year of 18 per cent. in gross and 13 per cent. in net earnings, the latter amounting to \$137,326, there having been a small decrease in the net in July in spite of the increase of 10 per cent. in gross earnings.

These months are before the new crop fairly began to move on this road. The wheat crop in Dakota is lighter this year than last, and it will not be surprising if there should be little increase in earnings for the remainder of the year, though from the rate wheat has been rushing into Duluth the large gain in September (19½ per cent.) was expected. Last year there was an unusually large increase from August to September and October, but October was the great month, and the earnings of the three fall months were considerably larger than ever before. The cattle as well as the wheat go to market in the fall, and there should be a considerable increase in these.

The Oregon Railway & Navigation Company no longer reports the great gains which it had shown nearly every month in its last fiscal year. Last August its gross earnings were but \$16,623 (3½ per cent.) more than last year, and in July about the same. The increase in working expenses was nearly twice as great as this, so that there was a decrease in net earnings for the two months amounting to \$34,031 (8 per cent.).

The company, however, is doing extremely well when it earns as much as it did last year. Then there was a phenomenal crop of wheat in Eastern Washington and Oregon, where most of its lines are, and it was getting full rates on the through traffic. It was not to be expected that there would be two years in succession when the circumstances would be so extremely favorable. Its increase in gross earnings in its last fiscal year (to June 30) was no less than \$1,464,422, or 36 per cent. After such a growth a rest is to be expected.

Mexican Central expenses continue to increase, and its earnings remain about the same. In August the increase in

expenses was no less than 44 per cent., resulting in a decrease of 40 per cent. in net earnings. For the eight months ending with August the earnings and expenses have been:

	1886.	1885.	Inc. or Dec.	P. c.
Gross earnings	\$2,113,356	\$2,115,017	—	1.681 0.1
Expenses	1,451,095	1,181,645	+ 270,050	22.8

Net earnings..... \$661,061 \$933,372 — 271,711 29.1

There have been considerable expenditures for renewals this year, and such expenditures, as we showed in reviewing the report, were very small last year. As they were below the average requirements last year, it is entirely possible that they are above them this year, though as the whole working expenses were but \$1,175 per mile for the eight months, they cannot be called heavy. The unfavorable feature is the failure of the earnings to increase. These were but \$1,710 per mile for the eight months, and the net \$535 this year and \$755 last year, all in Mexican silver. These include the months of the lightest traffic, however. Last year 40½ per cent. of the earnings of the whole year were made in the last four months of it. The improvement in business felt here evidently has not reached Mexico.

The gross earnings in September, reported since the above was written, were nearly one-fourth more than last year.

The report of the August earnings and expenses of the Atchison, Topeka & Santa Fe was curiously tortured in Boston, by taking the increase in gross earnings for a decrease, and adding them to this year's earnings to make last year's, and then making the working expenses such as to give the reported net earnings, showing an astonishing decrease in working expenses. This statement was copied in the New York papers and generally circulated. References to last year's report makes it possible for us to untangle the puzzle. The actual earnings and expenses in August for five years have been:

Year.	Gross earnings.	Expenses.	Net earn.
1882.....	\$1,251,663	\$612,111	\$639,552
1883.....	1,432,906	58,542	864,364
1884.....	1,391,319	771,332	619,987
1885.....	1,243,908	608,322	635,586
1886.....	1,341,951	635,658	706,293

Compared with last year there was:

An increase of \$98,042 = 8 per cent. in gross earnings.
" " " 44 " " expenses.
" " " 70,706 = 11 " " net earnings.

The crops were light in Kansas last harvest, and this is a more favorable report than was to be expected. The great amount of railroad construction going on in that state, however, is making great activity in almost every kind of business.

For the eight months ending with August the earnings and expenses of this road have been:

Year.	Gross earn.	Expenses.	Net earn.
1882.....	\$5,206,014	\$5,660,585	\$3,515,429
1883.....	10,147,610	4,786,366	5,361,044
1884.....	10,339,773	5,700,073	4,639,700
1885.....	9,652,949	5,367,360	4,285,589
1886.....	9,586,429	5,277,610	4,308,819

The gross earnings this year were the smallest since 1882, but only very little less than last year, and the decrease in expenses being larger, there is a trifling increase in net earnings.

The Louisville & Nashville Railroad had a very narrow margin over its fixed charges in its last fiscal year (ending June 30), but it begins this year much better, and in the month of August had larger gross earnings than in any previous year but one (1883), and an increase over last year of 11½ per cent. in gross and 18 per cent. in net earnings. For 5 years its gross and net earnings and working expenses in August have been:

Year.	Gross earn.	Expenses.	Net earn.
1882.....	\$1,045,912	\$606,221	\$439,692
1883.....	1,251,127	716,143	534,984
1884.....	1,177,317	604,335	482,982
1885.....	1,078,796	678,013	400,783
1886.....	1,200,567	695,227	505,340

The net earnings this year in August were exceeded only in 1882.

For the two months of the fiscal year to Aug. 31 the earnings and expenses have been:

	1883.	1884.	1885.	1886.
Gross earn.	\$2,375,903	\$2,177,418	\$2,136,128	\$2,460,340
Expenses	1,403,159	1,259,202	1,373,901	1,408,548

Net earn..... \$972,744 \$918,216 \$762,227 \$1,051,793

Thus both gross and net were larger this year than ever before, and the increase over last year is 15 per cent. in gross and 88 per cent. in net earnings. How great the improvement is over the first half of this year may be judged by the fact that in that half of the year the net earnings were but \$2,288,323, averaging \$381,387 per month, against \$506,117 in the subsequent months; while last year the average was \$440,112 in the first six months and \$371,138 in the two following. In fact, there was a decided change for the worse just at the beginning of the fiscal year last year, and a decided and even greater change for the better, which also comes just at the beginning of the fiscal year this year, and as the decline lasted throughout the fiscal year last year, it is reasonable to expect that the improvement will continue through the fiscal year this year.

There is said to be new competition for the traffic between Kansas City and Chicago by a connection which has just been made between branches of the Kansas Pacific and the Union Pacific lines of the Union Pacific, which illustrates the tendency to take traffic by any line, however indirect. The distance from Chicago to Omaha is the same as from Chicago to Kansas City by the direct lines. To get from Omaha to Kansas City by the Union Pacific the traffic goes 38 miles west to Valparaiso, Neb., then south 153 miles to Manhattan, Kan., and thence east 119 miles to Kansas City; or if to Leavenworth, east by north from Manhattan 115 miles—a route which might appropriately go by the name of "the Fishhook Line," 310 miles longer than the direct ones of 490 miles. The rates are

usually for most traffic the same from Kansas City and Omaha, but the Milwaukee & St. Paul has as yet no line to Kansas City or other "Southwestern" Missouri River points, and by this it is able to get some of the traffic thence. There probably has been but a very small movement that way, and there can hardly be any profit in it for either road, but the power to affect the rates between Kansas City and Chicago may be of value to them and help them to secure their desires with regard to other competitive traffic in negotiations with their competitors.

Probably, however, it is the local traffic and not the Kansas City traffic which they have in view in the arrangements which they make. Traffic to and from points west of Manhattan on the Kansas Pacific can now be taken either to Kansas City or Omaha, and though the distance to Omaha is the greater, it is greater by only 72 miles, which is comparatively unimportant. From Manhattan to Chicago is 609 miles by way of Kansas City, and 681 by way of Omaha. This is only one instance of the way in which new through lines are being multiplied by new roads often constructed almost entirely with reference to local traffic. The tendency is for every company to have a line more or less direct to every place of any importance in its territory, and be able to influence directly the rates on all traffic.

#### Record of New Railroad Construction.

Information of the laying of track on new railroad lines is given in the current number of the *Railroad Gazette* as follows:

*Arizona Central*.—Track laid to a point twenty miles from Chino, Ari., an extension of 10 miles.

*Atchison, Topeka & Santa Fe*.—The Great Bend Extension is extended west to Rush Centre, Kan., 9 miles.

*Burlington, Cedar Rapids & Northern*.—The Sioux Falls Extension is extended from Rock Rapids, Ia., west 16 miles.

*Chicago, Milwaukee & St. Paul*.—On the Astor & Sioux City line track is laid from Sioux City, Ia., southeast 12 miles. The Hutchinson Line is completed from Glencoe, Minn., to Hutchinson, 14 miles. The Sioux City & Dakota Division is extended from Scotland, Dak., to Mitchell, 48 miles.

*Council Grove, Osage City & Ottawa*.—Track laid from Ottawa, Kan., west to Osage City, 30 miles.

*Fort Worth & Denver City*.—Extended from Harrold, Tex., northwest 9 miles.

*Georgia Pacific*.—Extended from Coalburg, Ala., west 5 miles.

*Los Angeles & San Gabriel Valley*.—Extended from Santa Anita, Cal., east to Monrovia, 4 miles.

*Louisville, New Albany & Chicago*.—On the Blue Lick Springs Branch track is laid from Orleans, Ind., south to Paoli, 10 miles.

*Owensboro & Nashville*.—A branch is completed to the Mud River coal mines in Kentucky, 3 miles.

*Parsons & Pacific*.—Completed from Parsons, Kan., southwest to Mound City, 14 miles.

*Portland & Willamette Valley*.—Track laid from Elk Rock, Ore., south to Chehalis Gap, 14 miles.

*Southern Pacific*.—The Northern Division is extended south by east to San Miguel, Cal., 20 miles.

*Union Pacific*.—The Grand Island & North Loup Branch is extended from North Loup, Neb., northward to Ord, 12 miles.

*Wilmington & Weldon*.—The Wilson Cut-off is completed to Fayetteville, by laying track from Benson, N. C., northeast 15 miles.

This is a total of 245 miles on 15 lines, making 4,033 miles reported so far this year. The new track reported to the corresponding date for 15 years has been:

Year.	Miles.	Year.	Miles.	Year.	Miles.
1886.....	4,033	1881.....	5,340	1876.....	1,740
1885.....	1,825	1880.....	4,133	1875.....	1,903
1884.....	2,806	1879.....	2,507	1874.....	1,180
1883.....	4,629	1878.....	1,422	1873.....	2,897
1882.....	8,081	1877.....	1,548	1872.....	5,147

This statement covers main track only, second or other additional tracks and sidings not being counted.

#### TRADE CATALOGUES.

*A System of Standard Gauges*. Made by Betts Machine Co., Wilmington, Del.

This little pamphlet gives details as to all the usual forms of measuring machines, corrective gauges, mandrels, caliper gauges, reamers, etc. The gauges are manufactured by two scales of precision, B, guaranteed within 1/1000 part of an inch, and C, within 1/500 part only. The additional cost due to the minuter accuracy is as \$331.78 to \$365.72, or about 25 per cent. excess for a set of 77 gauges varying from 1/4 in. to 6 in., varying by 1/16 in. up to 4 in. and thence by 1/8 in.

#### Foreign Technical Notes.

The eleventh technical convention of the German Railroad Union was held in Salzburg July 28 to 29, at which 68 delegates present were from 47 different railroad managements and giving 236 votes.

Electric lights have been used for three months past in a dining car running between Paris and Brussels. The electricity is supplied neither from a dynamo nor accumulators, but from the constant batteries of Desruelles. Forty-five of these in 15 boxes, weighing nearly 1,400 lbs., are attached under the car. They are said to afford light for 70 hours to 21 lamps with 100 aggregate candle power. The light is very steady for the first 20 hours and then begins to grow weaker. To supply the same light from an accumulator nearly twice the weight would have to be carried.

At the last meeting of the British Association, Mr. William P. Marshall read a paper on "American and English

Railways, in reference to Couplings, Buffers and Gauge, with a suggested improvement in Couplings," which is pronounced by *Engineering* to have been "long and extremely interesting." We observe no points of special novelty or interest for Americans in it, except a statement that "the great defect in these [freight car] couplings is that the carriage and wagon couplings are so entirely different that the coupling of a carriage to a wagon is only effected by an unsatisfactory makeshift," which will be news to most of us; but the qualifications of the author for discussing the subject can be better judged from a statement in reference to passenger cars:

"The American end platforms were a very bad feature, and it was sad to see an arrangement [the passenger couplers] that was almost perfectly designed for the safety of the railway servants worse than neutralized by these platforms. The difficulty could easily be got over, as the platforms were not necessary in their present shape. A narrow gangway, in the central part, about 18 in. wide, would be sufficient for communication, and the men could then walk up to the coupling, instead of having to crawl under as at present."

Precisely so; we can only wonder that no one ever thought of it before.

An interesting exhibition is to be held in England next year. Newcastle-on-Tyne, the birthplace of the locomotive, the miners' safety-lamp and many other useful inventions, is about to hold a "Mining, Engineering and Industrial Exhibition." The names of the vice-presidents include the best known engineers, ship-builders, mine-owners and manufacturers of the North of England, and most of the consuls and vice-consuls representing our own and other countries. The large number and influential character of the supporters of the exhibition afford a guarantee that it will be a great success. The management especially desire that locomotives be strongly represented, and it is hoped that American locomotive builders will send some specimens of their modern monsters to be placed alongside the "Rocket" and its descendants, built on the other side of the herring pond. Some arrangement might perhaps be made with an English company to buy the engine or engines at the conclusion of the Exhibition. A fairly representative American locomotive has not been seen in England for the last fifty years, when some were sent over for working a heavy incline. Naturally, therefore, a modern first-class American express or Consolidation engine would excite a great deal of interest, and if none of the American builders feel inclined to send over a specimen of their handiwork, it is hoped that one at least of our railroads will be more enterprising and show what this country can accomplish in locomotive building.

Von Borries, the designer of the compound locomotive most used in Germany, has published a statement of the saving in fuel effected in several cases. On freight trains run between Hanover and Minden for three months in the winter of 1882-83, just after the compound engine came from the shops, the saving was 10½ per cent. In freight runs between Göttingen and Hanover and Göttingen and Cassel for two months in the summer of 1883, the consumption was 59½ lbs. per 100 axle-miles with the ordinary locomotive, and 49½ with the compound, a saving of 17 per cent.

Again, in freight runs on all the above routes for the nine months from July 1, 1883, to April 1, 1884, the saving was 21 per cent.

On a mountain line for two months in the summer of 1884, in freight service the compound burned 60.2 lbs. coal per 100 axle-miles and the ordinary engine 71.8, a saving of 16 per cent.

In November and December, 1885, on express trains between Hanover and Hamburg, the ordinary engine burned 152 lbs. per 100 axle-miles and the compound 127½, or 16 per cent. less. At the same time, on express trains on two other routes the consumption was 170 and 145 lbs.—14½ per cent. less with the compound.

In a trial with fast trains for five months between October and May of last year the compound burned 124 and the other 141 lbs., or 12.2 per cent. less for the compound. There was also a saving of 17 per cent. in way passenger service for nine months and 16 per cent. in freight service for four months in 1885.

The cost of the compound locomotives is said by von Borries to be 2.3 per cent. greater than that of ordinary engines.

#### TECHNICAL.

##### Locomotive Building.

The Dickson Manufacturing Co. in Scranton, Pa., has recently received an order for 10 locomotives for the Delaware, Lackawanna & Western road.

The New York, Lake Erie & Western shops in Susquehanna, Pa., are building 5 consolidation freight engines for the road.

The Rhode Island Locomotive Works in Providence are full of work and have some 1,300 men employed.

The Canadian Pacific shops in Montreal recently completed a consolidation freight engine with 19 by 22 in. cylinders and 51 in. drivers. It is said to be the first consolidation engine ever built in Canada.

The Grant Locomotive Works in Paterson, N. J., have an order for 10 consolidation freight engines for the New York, Lake Erie & Western road.

##### The Car Shops.

The Chicago & Grand Trunk shops at Fort Gratiot, Mich., are building 4 new passenger cars for the road.

The Litchfield Car Co., in Litchfield, Ill., has orders for over 900 freight cars, and all the departments are crowded with work.

##### Manufacturing and Business.

The Wainwright Manufacturing Co., 65 and 67 Oliver st., Boston, and 93 Liberty st., New York, report the following sales of their feed-water heaters for the month of September: F. A. Barker, Marblehead, Mass.; A. Liebler & Co., New York; Thomson-Houston Electric Co., Lynn, Mass.; Whidden, Hill & Co., Boston; Freyner & Razez, Rochester, N. H.; Hill, Clarke & Co., Boston; Howard Patent Metallic

Brush Co., Reading, Mass.; Fairbanks & Co., Pittsburgh, Pa.; 3 heaters; Fairbanks & Co., Philadelphia, and to Robt. Lauryon & Co., Pittsburgh, Kansas. The patent corrugated brass tube radiators are still finding ready sales, and they report a brisk trade in pipe and fittings, their orders in that department being very heavy. The outlook for the present month is stated to be very encouraging.

The Harlan & Hollingsworth Co., in Wilmington, Del., has Mr. Wm. K. Vanderbilt's new steam yacht "Alva" nearly completed. It will probably be launched Oct. 16.

Messrs. Pedrick & Ayer, of the L. B. Flanders Machine Works, Philadelphia, have recently shipped the following: Patent portable valve-seat rotary planing machines to the Texas & Pacific; Richmond & Danville; Canadian Pacific; Buffalo, Rochester & Pittsburgh; Baldwin Locomotive Works, and O. L. Packard, Milwaukee, Wis. Patent portable crank pin machines to the Canadian Pacific; New York & New England, and Manning, Maxwell & Moore, New York. Patent portable locomotive cylinder boring machines to the North Georgia Improvement Co.; Morgan's Louisiana & Texas; Baldwin Locomotive Works, and Manning, Maxwell & Moore. Otto's patent flue cleaning machine to the Pennsylvania Co. and the Chicago, St. Louis & Pittsburgh. Radius link planer attachment to the Tanner & Delaney Engine Co. and to Manning, Maxwell & Moore. The "Gyp" Engine to the St. Louis, Arkansas & Texas. Inquiries are numerous, and they hope for a fine fall and winter trade.

##### Iron and Steel.

A Nashville, Tenn., dispatch of Sept. 29 says: "At a meeting of the stockholders of the Tennessee Coal, Iron & Railroad Co. here to-day, the purchase by this company of the Pratt Coal & Iron Co., the Alice Furnace Co. and the Linn Iron Works, of Birmingham, Ala., was consummated and confirmed. This action has brought together under one management a large and valuable coal and iron property. The provisions of the consolidation put large capital into the treasury of the company and provide for the building of five additional furnaces of 200 tons daily capacity each, and the building of 1,000 additional coke ovens, the combined properties now having five furnaces and 1,500 coke ovens in active operation."

The Chicago Furnace Co. has been organized to operate the blast furnaces of the Calumet Iron & Steel Co. at Cummings, near Chicago.

Scioto Furnace, near Ironton, O., went into blast last week. The Helmbacher Forge & Rolling Mill Co., in St. Louis, is at work on some large orders for car axles and other railroad forgings.

The Springfield (Mass.) *Republican*, of Oct. 5, says: Negotiations were completed yesterday for the sale of the Talcott Forge at Brightwood to John McFethries and William C. Lawton, of this city. The new firm will take possession as soon as the title has been shown to be clear, and will probably begin operations Saturday. Mr. McFethries has a large experience in the foundry business. He was employed seven years in the Boston & Albany shops in this city, and went to Russia in 1859 as foreman under Winans Bros., of Baltimore, and spent 20 years there. He will attend to the general superintendence of the works and Mr. Lawton will be the Treasurer and traveling salesman. The sales was for cash, and it is stated that the price was about \$16,000.

##### The Rail Market.

Steel Rails.—The market is steady, with quotations unchanged at \$34-\$35 per ton at eastern mills, and plenty of business reported. Sales of light rails are reported at \$36-\$40, according to section.

Rail Fastenings.—A fair demand is reported, with quotations unchanged at 2.40 cents per lb. for spikes in Pittsburgh; 2.75-\$3 for track-bolts and 1.65-\$1.75 for splice-bars.

Old Rails.—The market for old iron rails is active, with some large sales reported, and a short supply. Quotations are \$21-\$22 per ton at tidewater. Old steel rails are quoted at \$21-\$24 per ton in Pittsburgh, according to length.

##### Car Couplers.

The freight cars of the Chicago & Grand Trunk road are being fitted with the Aikman coupler as they come into the shops. The Aikman is one of the couplers approved by the Michigan Railroad Commissioner.

##### The Freight Brake Trials.

The Ward Axle Brake & Coupler Co., of Monongahela City, Pa., has notified Mr. Rhodes, Chairman of the M. C. B. Committee on Freight Train Brakes, that it will enter its brake for trial in the tests to be held in April, 1887. The Ward brake is a friction brake operated by a push-rod running through the train and actuated by a steam cylinder on the tender.

##### Cable Traction.

The Jonson Foundry & Machine Co., of New York, who built the 125th street cable road, announce themselves as contractors for cable railway plant, ready to erect at their own works the switches, vaults, elevating devices, etc., ready for placing in the ground. They are patentees and manufacturers of the Jonson & Robertson cable grip, which is adopted on the Third Avenue road, of New York, and which has pulled 7 cars through snow drifts up an incline of 350 ft. to the mile.

##### Car Springs.

The A. B. Davis Car Spring Co., of Philadelphia, announces that "Mr. Edward Hill, having severed his connection with Messrs. N. & A. Middleton & Co., Limited, is to-day elected Secretary and Treasurer of this company, with branch office in Mills Building, New York." Mr. Hill, who was formerly Purchasing Agent of the Chicago & West Michigan Railroad, and is a car-builder of experience, has purchased the entire stock of the company. He will manufacture all descriptions of hot-coil springs, as well as the A. B. Davis combined spiral spring.

##### Progress of Natural Gas.

The eighth edition of the Directory of the Iron and Steel Works of the United States, published by the American Iron & Steel Association, and corrected to July 15, 1886, shows that, while two years ago not more than six rolling mills and steel-works in the United States used natural gas as fuel, there are now 68 rolling mills and steel-works which use the new fuel, and 16 which are making preparations to use it. All the rolling mills and steel-works in Allegheny Co., Pa., 55 in all, now use natural gas. In Western Pennsylvania, outside of Allegheny Co., it is used in 12 mills and steel-works, and seven others, including the rolling-mill and Gautier steel departments of the Cambria Iron-Works, 79 miles east of Pittsburgh, are preparing to use it. One rolling mill in Ohio is now using it, and eight mills are getting ready to use it. At Wheeling, W. Va., one mill is making arrangements to introduce it. In all but a very few of the mills and steel-works referred to natural gas is used as fuel exclusively.

##### Lumbering in Northeastern Texas.

A Texas correspondent of the *Northwestern Lumberman* writes: "The Trinity & Sabine Railroad is properly a branch of the International & Great Northern, and comes in as part of the Missouri Pacific system, which is the great

railroad artery of the Southwest. It commences at Trinity, on the International & Great Northern, and runs in an easterly direction for a distance of 66 miles. This entire distance is thickly covered with long leaf pine, and some of the finest mills in the south are located here, with capacities ranging from 30,000 to 75,000 feet a day. The lands are cheap—from \$4 on the road to \$1, three and four miles back. They yield an acre is variously estimated by experts at from 7,000 to 15,000 ft., and from my knowledge of the country I think it safe to say that 10,000 ft. is an average. The country is slightly rolling and consequently an easy one in which to build tram railroads, and a good many of the mill owners are now building such roads into the timber. Several are already in operation and others in process of construction. Owing to our mild winters, the mills run the entire year, not knowing what it is to shut down on account of bad weather."

##### Railroad Tie Supply from Southwest Missouri.

A correspondent of the *Northwestern Lumberman* writing from Kansas City says: "At present probably there is no section of the west where there is more money paid out for railroad ties than in Southwest Missouri. This is not generally known, as the industry has been worked up within the last year until it has grown to be of great importance to the inhabitants of the rather sparsely settled section of the 'puke state.' During the past summer there have been on an average over \$12,000 paid out monthly for ties at the town of Osceola, in St. Clair County. This certainly speaks well for an industry which was unknown almost 12 months ago. Black oak sells to the contractors at 25 cents, while white, burr and post oak bring 35 cents. This makes for the contractor a very good profit. This party manages to get from the railroads within 100 miles all the way from 50 to 70 cents. The supply is by no means inexhaustible and it is reckoned that at the present rate of cutting there will be little left in Southern Missouri within 10 years."

##### Wooden Lumber Railroads Condemned.

A mill man writes from Arkansas to the *Northwestern Lumberman* that "no man is rich enough to run a wooden tramway," and the *Lumberman* adds, "as he also says that he is using one, 1½ miles long, he probably speaks from a bitter experience! The Arkansas gentleman, however, is right. The man who lays wooden rails for a logging road is a long way behind the times. Wooden rails have their advocates, but the most competent evidence is the balance sheet of the man who has used both wood and iron. The universal experience of extensive operators is that wood is the more expensive and less safe."

##### Steel Lake Steamers.

A Buffalo letter says: "It is reported that the Union Steamship Co. has resolved on a radical change of base so far as the makeup of the fleet is concerned. The 'Dean Richmond,' 'Newburg,' 'Waverly,' 'James Fisk,' 'B. W. Blanchard,' 'Arctic,' and 'St. Louis' are to be sold. This leaves of the old fleet only the 'Rochester,' 'New York,' 'Avon,' 'Portage,' 'Starucca,' and 'Nyack,' with the 'Jewett' and 'Tioga' lately added. It is understood that the plan is to replace all these with large steel steamships as soon as possible, all of which will be as large or larger than the new Anchor Line steamship 'Susquehanna.' The one now projected will be hurried forward so as to be launched in January. Following her, a second one will be built as soon as room can be had in the yards, and she will be out in July next. After that a steel vessel will be built every year until the transformation of the fleet is complete. It is confidently stated that the 'Susquehanna' will be faster than either the 'Jewett' or 'Tioga,' and no one who looks at the sharp bow of the model of the new Union boat will doubt for a moment that her speed will be considerably greater than the 'Susquehanna.'"

The Union Dry Dock Co. in Buffalo, N. Y., is getting ready to lay the keel for the new steel steamship that it is to construct for the Union Line. The keel will be 30 ft. longer than that of "Susquehanna." She is to be constructed after a model made by George B. Mallory, and will be of the following dimensions: Length of keel, 325 ft.; beam, 41 ft.; molded depth, 25½ ft. She will be much finer forward than "Susquehanna" and will have a full length water ballast bottom like "Onoko" and "Tioga." She is designed to carry 2,900 tons of freight on 15½ ft. draft. Her engines will be different from any now on the lakes. The high-pressure cylinder will be 28 in. in diameter, and will exhaust into a low pressure of 42 in., and this into another of 72 in., the engines being of the triple expansion compound pattern.

##### A Huge Cotton Compress.

A large cotton compress at Norfolk, Va., the property of the National Compress Association, has lately been tested by experts, who found that it gave a pressure of 6,058 tons. The whole machine is 79 ft. high and is operated by one cylinder of 80 in. diameter, and one cylinder of 100 in. diameter, steam of 135 lbs. pressure being used.

##### A Logging Road on Lake Superior.

The Marquette Mining Journal of Oct. 2 says: "Matthew Johnson, of Bay City, who has been engaged for some time in laying out the route for the McGraw logging road on Dead River, has returned to the city and is now writing up his notes. The road will be a narrow gauge, 10½ miles in length, extending from the upper falls of Dead River to the slack water at the mouth, and will be built to facilitate lumbering operations on the tract of land purchased last winter from Mayor Thurber by T. H. McGraw & Co. The route selected is by way of Compeau's Creek a good part of the way, and is wholly on the west side of the river."

"A good deal of difficulty was experienced in finding a feasible line because of the great elevation to be overcome at one point. By the route finally selected the greatest elevation reached is about 800 ft. above the lake, while the river above the falls was found to be a little over 700 ft. higher than the mouth. The engines to be used will have 8 drivers, and will be geared 5 to 3. It is probable that the work of construction will be commenced this fall, as parties are known to be figuring on the contracts, while next season lumbering will probably be commenced on the tract and the road will be wanted for use."

##### A Locomotive's Long Run Without Repairs.

The Toronto (Ont.) *Globe* of Sept. 20 says: "Engine No. 61 on the Northern & Northwestern Railway was built at the Brooks Locomotive Works, at Dunkirk, N. Y., and without any general repairs has exceeded the best record by more than the ordinary life of a locomotive. Its total mileage, without any general repairs, has aggregated 190,554, and in running that distance has not had even a pin, a brass, a driving-brass, or a flue taken out in that mileage. After she had run 45,179 miles she had a slight accident which necessitated her being taken off her wheels and she then had her tires turned. Since that she has run 145,375 miles without being lifted off her wheels. She was used at first and for some time as a freight engine, but at the time of the accident was converted into a passenger engine. She has a 17 by 24 cylinder and 5 ft. driver. She has now just come out of the shop with Clarke & Reid's new smoke-box and stack, and is working very successfully. Her engineer, Mr. Robert Pearson, has been in the employ of the Northern Railway for 31 years, and has

run very considerably over a million miles without an accident worthy of record. It is needless to add that he is proud of his engine and more than pleased with the improvements which have been recently made.

#### The Steel Rail Question.

About six weeks ago I had to attend the inspection of rails at one of the largest iron and steel works in the United States, where the metal is directly taken from the blast furnaces into the converters, to be blown into steel. While there the General Manager of these works showed me a small sample of the steel directly made from blast furnace process, asking my opinion about its quality. After I had carefully examined—though I do not pretend to be a superior judge of metals—I told the gentleman I did not believe it to be a reliable grade of steel. He then observed that the same grade of steel had produced nice rails, to which I said: "Perhaps nice-looking rails, but as to good quality, it is another thing." That sample of steel, 8 in. in length, 4 in. wide and 3 in. thick, showed a cavity or sinkage covered with a dirty-looking substance. I inquired of the General Manager if he thought that good car wheels could be cast with such metal, but he said he did not think so. I still asked what he thought the cause of the sinkage was, but he would or could not say. In my honest opinion the simple truth is, the too fast running of the blast furnaces does not give the necessary time for the ore to properly melt, so that silicious matters, cinders, etc., remain in.—*G. H. Lagorge, in Philadelphia Times.*

#### A Light Draft Steamboat.

A steamboat has been built to navigate the Allegheny River between this city and Kittanning, a distance of 45 miles. Although 142 ft. long and 25 ft. beam she draws but 10 in. of water. It has been nearly or quite 30 years since steamboat packets ran on the Allegheny, and it has been believed that the railroads had crowded them off for all time, but the builder of the craft mentioned—the "Nellie Hudson"—believes that there is still a chance for a line of properly-constructed boats, and if this first venture pays we believe he intends to add other boats, and perhaps run some of them as far up as Oil City.—*American Manufacturer, Pittsburgh.*

#### Safety Switches.

The Batt safety switch was successfully tested at Buffalo last week in the presence of T. W. Spencer, Inspector for the Railroad Commission of New York, and a number of railroad officers. This switch is being put in the Scranton and the Buffalo yards of the Delaware, Lackawana & Western road.

### General Railroad News.

#### MEETINGS AND ANNOUNCEMENTS.

##### Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

*Cincinnati, Sandusky & Cleveland*, annual meeting, at the office in Sandusky, O., Oct. 20.  
*Evansville & Terre Haute*, annual meeting, at the office in Evansville, Ind., at 2 p. m., on Oct. 18.  
*Ohio & Mississippi*, annual meeting, at the office in Cincinnati, Oct. 14. Transfer books close Sept. 18.  
*Pullman's Palace Car Co.*, annual meeting, at the office in Chicago, at 3 p. m. on Oct. 14.  
*Western Maryland*, annual meeting, in Hillen Station, Baltimore, Oct. 20, at noon.

##### Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

*Atchison, Topeka & Santa Fe*, 1½ per cent., quarterly, payable Nov. 15, to stockholders of record on Oct. 11.  
*Concord*, 5 per cent., semi-annual, payable Nov. 1.  
*European & North American* (leased to Maine Central), 2½ per cent., semi-annual, payable Oct. 15.  
*Long Island*, 1 per cent., quarterly, payable Nov. 1, to stockholders of record on Oct. 11.  
*New York Central & Hudson River*, 1 per cent., quarterly, payable Oct. 15, to stockholders of record on Sept. 30.  
*St. Paul, Minneapolis & Manitoba*, 1½ per cent., quarterly, payable Nov. 1. Transfer books close Oct. 18.  
*United New Jersey* (leased to Pennsylvania Railroad Co.), 2½ per cent., quarterly, payable Oct. 10.  
*Vermont & Massachusetts* (leased to Fitchburg Co.), 3 per cent., semi-annual, payable Oct. 7.

##### Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Roadmasters' Association of America* will hold its annual convention in St. Louis, on Tuesday, Oct. 12.  
The *General Time Convention* will hold its fall meeting in New York, on Wednesday, Oct. 13.  
The *Association of American Railroad Superintendents* will hold its next meeting at No. 46 Bond street, New York, on Thursday, Oct. 14.  
The *New England Roadmasters' Association* will hold its fourth annual meeting at the Hotel Windsor in Manchester, N. H., beginning at 2 p. m., on Wednesday, Oct. 20.  
The *Association of Railroad Trackmen of North America* will meet at Council Bluffs, Ia., on Thursday, Nov. 25.  
The *Master Car-Builders' Club* holds its regular meetings at the rooms, No. 113 Liberty street, New York, on the third Thursday in each month.  
The *New England Railroad Club* holds its regular meetings at its rooms in the Boston & Albany passenger station in Boston, on the second Wednesday of each month.  
The *Western Railway Club* holds its regular meetings at its rooms in Chicago on the third Wednesday in each month.  
The *Western Society of Engineers* holds its regular meetings at its hall, No. 15 Washington street, Chicago, at 7:30 p. m., on the first Tuesday of each month.

##### Foreclosure Sales.

The *Illinois Midland* road was sold in Springfield, Ill., Sept. 30, under decrees of foreclosure granted by the United States Circuit Court. The three roads which were consolidated to form the line—the Peoria, Atlanta & Decatur, the Paris & Decatur and the Paris & Terre Haute—were put up separately, in accordance with the decree. The whole property was bought for \$1,120,000 by Mr. R. K. Dow, of Claremont, N. H., acting for the bondholders. The road extends from Peoria, Ill., to Terre Haute, Ind., 173 miles; it has always been an unfortunate line and has been for 11 years in the hands of a receiver. The funded debt was \$4,175,000, and there is also a considerable debt of the receivership.

The *Georgetown & Lane's* road was sold in Charleston, S. C., Oct. 5, under a decree of foreclosure granted by the United States Circuit Court, and was bought for \$80,000 by Maj. W. H. Brawley, as agent for the bondholders. The road extends from Georgetown, S. C., to Lane's, on the Northeastern road, 37 miles. The funded debt consisted of \$325,000 first mortgage 7s. The road was built in 1883.

##### General Time Convention.

The fall meeting of the General Time Convention will be held

at the Hotel Brunswick (Fifth avenue and Twenty-sixth street), New York city, on Wednesday, Oct. 13, at 11 a. m.

The Committee on Uniform Train Rules and Telegraph Orders will present a report recommending a code of general and train rules for adoption by the Convention.

#### New England Roadmasters' Association.

The Fourth Annual Meeting of the Association will be held at the Hotel Windsor, Manchester, N. H., Oct. 20 and 21, 1886. Meeting will be called at 2 p. m., Oct. 20, and with proper intermissions, there will be work done until adjournment on evening of Oct. 21.

After the regular annual business of the Association, viz.: Reading of the Minutes of last meeting, Enrollment of New Members, Reading Communications, Election of Officers, Report of Committees, Unfinished and Miscellaneous Business, there will be discussed the following questions:

Road Tools.  
Nut Locks.  
Economy of Labor and Material in Maintenance of Track.  
Split Switches.  
Elevation of Curves.  
Review of previous years' discussion of Joints, Rails, etc.  
There has been issued a circular of questions pertinent to each question to be discussed, and the Secretary will report the answers to same before the question is open for discussion. Roadmasters are expected to be prepared to be called on to give reasons for arriving at conclusions.  
The circular issued to roadmasters gives a list of questions to be answered, covering very fully most of the ground indicated above.

#### ELECTIONS AND APPOINTMENTS.

*Boston & Albany*.—Mr. H. B. Chapin is appointed Assistant General Freight Agent, with office in Boston. He was recently Chief Clerk in the general freight office.

*Baltimore & Ohio*.—The following circular from Vice-President S. Spencer is dated Baltimore, Sept. 30:

"Mr. George D. De Shields is this day appointed Superintendent of Hotels, embracing the Viaduct, the Queen City and the Grafton hotels, with headquarters at Queen City Hotel, Cumberland."

*Burlington, Salina, Hutchinson & Southern*.—The director are: E. W. Ober, A. F. Harsh, H. Baker, A. M. Clafin, M. D. Teague, M. M. Briggs, John Anderson, Salina, Kan.; S. W. Campbell, A. L. Forsha, John Futerbaugh, L. A. Biggen, J. F. Greenlee, M. Robb, Hutchinson, Kansas.

*Chicago, Burlington & Quincy*.—The following circular was issued on Oct. 1: "Mr. Paul Morton having been promoted to the General Passenger Agency, and the position of First Assistant General Freight Agent been consequently vacated, that office, as well as those of Second and Third Assistant General Freight Agent, is abolished. Messrs. G. H. Ross, J. S. Bartle and Fred Rogers are appointed Assistant General Freight Agents, dating from Oct. 1, 1886." Mr. Rogers was formerly General Agent at Pittsburgh.

*Chicago & Eastern Illinois*.—At the annual meeting in Chicago, Oct. 5, the old directors were re-elected without opposition.

*Chicago, Kansas & Nebraska*.—President M. A. Low announces that Mr. C. W. Fisher is appointed General Manager; appointment to take effect Oct. 1. Headquarters Atchison, Kansas.

*Chicago, Milwaukee & St. Paul*.—It is announced that Mr. Frank S. Bond has been chosen Vice-President in place of Mr. Julius Wadsworth, resigned. Mr. Bond will have his office in New York.

*Chicago & Northwestern*.—General Superintendent C. C. Wheeler has issued the following announcement dated Sept. 28: "Mr. W. B. Mellen, Assistant General Superintendent, having tendered his resignation, to take effect Oct. 1, to accept a higher position with another company, reports heretofore sent to him will, on and after that date, be sent to the undersigned."

Traffic Manager H. C. Wicker makes the following announcement: "Mr. Edward P. Wilson is appointed General Passenger Agent of this company, in place of Mr. R. S. Hair, resigned. Appointment to take effect Oct. 1, 1886."

*Chattanooga Lake*.—This company as consolidated has the following board of directors: R. N. Marvin, O. E. Jones, F. E. Gifford, John Cadwell, Willis Tew, A. N. Broadhead, Erie L. Hall, Jamesstown, N. Y.; Francis B. Brewer, Reuben G. Wright, E. A. Skinner, Westfield, N. Y.; John C. Williams, Cleveland, O.; Wm. M. Barnum, New York; E. B. Phillips, Boston.

*Colorado Midland*.—Mr. Mace Moulton is appointed Engineer of Bridges, with headquarters at Colorado Springs, Col. He was recently Assistant Chief Engineer of the Kentucky & Indiana Bridge.

*Columbus Belt*.—The incorporators are: Henry Stearns, S. L. Johnson, Theodore H. Butler, G. C. Hoover and Duncan Shaw. Office in Columbus, Ohio.

*East Tennessee, Virginia & Georgia*.—Mr. J. A. Gallagher has been appointed Master of Trains of the Brunswick Subdivision, with office in Macon, Ga., in place of B. A. Cunningham, deceased.

*Flint & Pere Marquette*.—The following from Vice-President and General Manager H. C. Potter announces officially an appointment heretofore noted: "Mr. Arthur Patriarche is hereby appointed General Freight Agent of this company, with headquarters at East Saginaw, Mich., to take effect Oct. 1, 1886."

*Interstate Belt*.—The directors are: Nicholas McAllpine, E. S. W. Drought, E. A. Quill, W. K. Faulconer and James I. Reynolds, all of Kansas City.

*Kansas & Southwestern*.—The officers of this company are as follows: Alonzo Stevens, President, Chicago; James N. Young, General Manager, Winfield, Kan.; L. D. Latham, Assistant General Manager, Winfield, Kan.; H. B. North, Superintendent, Arkansas City, Kan.; E. B. Wingate, Chief Engineer, Arkansas City, Kan.; S. C. Gibbs, General Freight and Passenger Agent, Winfield, Kan.; Jas. Hill, General Agent, Arkansas City, Kansas.

*Lakeside & Marblehead*.—The officers of this new company are: President and General Manager, E. H. Brennan, Toledo, O.; Vice-President, Thomas Fletcher, Jr., Cleveland, O.; Secretary, D. K. Stevens, Sandusky, O.; Treasurer, W. O. Chapman, Boston.

*Lake Shore & Michigan Southern*.—General Superintendent P. P. Wright has issued the following circular dated Sept. 20: "Until further notice Mr. C. B. Couch, with headquarters at Cleveland, will assist me in the discharge of the duties of my office. His orders with respect to any matters in any of the departments over which the General Superintendent has supervision, will be respected and obeyed accordingly."

*Louisville, Cincinnati & Dayton*.—The directors of this

new company met in Madison, Ind., Sept. 24, and elected Mr. J. W. Fawcett, of Louisville, Ky., President.

*Louisville & St. Louis*.—The office of this company is in Jacksonville, Ill., and the directors are Edward S. Greenleaf, Marshall P. Ayers, Augustus E. Ayers, Wm. S. Hook and Marcus Hook, all of Jacksonville.

*Louisville & Nashville*.—At the annual meeting in Louisville, Ky., Oct. 6, the following directors were chosen: John A. Carter, Frederick W. Foote, J. A. Horsey, John H. Inman, August Belmont, Jr., Arnold Marcus, Eckstein Norton, J. D. Probst, Thomas Rutter, J. S. Rogers, Milton H. Smith, John D. Taggart, and J. B. Wilder. The only change is the substitution of August Belmont, Jr., of New York, for J. H. Linderberger, of Louisville. Out of 300,000 shares, 205,196 shares were represented at the meeting and voted for the above-named ticket.

The board elected Eckstein Norton President; Milton H. Smith, Vice-President. This reverses the positions formerly held by these gentlemen, but it is stated that the duties performed by each will be substantially the same as heretofore, Mr. Norton having the financial management and Mr. Smith charge of the operation of the road.

The following circular from General Manager J. T. Harahan is dated Louisville, Ky., Oct. 1:

"Mr. Reuben Wells is hereby appointed Superintendent of Machinery, with office at Louisville, Ky. Mr. Harvey Middleton is appointed Assistant Superintendent of Machinery, with office at Louisville, Ky. Appointments effective this date."

*Minneapolis, Sault Ste. Marie & Atlantic*.—At the annual meeting, in Minneapolis, Minn., Sept. 21, the following directors were elected: W. D. Washburn, J. S. Pillsbury, H. E. Fletcher, John Martin, Thomas Lowry, C. H. Pettit, W. H. Eustis, O. C. Merriman, C. J. Martin, J. C. Oswald, J. K. Sidle, J. M. Shaw, M. P. Hawkins. Officers were elected as follows: President, W. D. Washburn; Vice President, John Martin; Treasurer, C. H. Pettit; Secretary, M. P. Hawkins.

*Newport & Wickford*.—At the annual meeting in Newport, Oct. 4, the following directors were chosen: George Peabody Wetmore, John G. Weaver, Newport, R. I.; S. R. Vaughan, Wickford, R. I.; J. N. A. Griswold, David King, George M. Miller, New York. The board elected George M. Miller, President; A. S. Sherman, Secretary and Treasurer.

Mr. J. B. Gardiner, Superintendent of the New York, Providence & Boston road, is to be Superintendent of this line also, in place of Theodore Warren, resigned.

*New York Central Sleeping Car Co.*—President W. S. Webb announces the following promotions in the operating department of this company to take effect Oct. 1, 1886: Captain N. M. Wheeler, to be Assistant to the General Superintendent; Mr. J. C. Yager, to be Superintendent of the Eastern Division; Mr. C. P. Krauth, to be Superintendent of the New York District.

*New York, Lake Erie & Western*.—Mr. D. H. Blackham, late Superintendent of Transportation, is appointed Superintendent of the Susquehanna Division in place of Mr. R. B. Cable, resigned.

*Pensacola & Memphis*.—At a meeting at Brewton, Ala., Sept. 23, officers were elected as follows: L. H. Sellers, President; Ed. Watkins, Vice-President; S. N. Van Praag, Secretary; S. C. Cobb, Treasurer; W. B. Wright, Auditor.

*Philadelphia & Reading*.—Mr. Austin Corbin, of New York, who was recently chosen President of the company, has been appointed by the Court an additional Receiver. The Receivers now are George de B. Keim, Stephen A. Caldwell and Austin Corbin.

*St. Johnsbury & Lake Champlain*.—At the annual meeting in St. Johnsbury, Vt., Sept. 29, the following directors were chosen: A. B. Jewett, Horace Fairbanks, G. W. Heide, A. E. Folsom, W. G. Stowell, C. S. Mellen, H. N. Turner, C. E. A. Bartlett, W. S. Simonds. The board elected the following officers: President, C. S. Mellen; Vice-President, A. B. Jewett; Treasurer, W. A. Stowell; Executive Committee, A. B. Jewett, C. S. Mellen, Wm. A. Stowell. The road is worked by the Boston & Lowell.

*Savannah, Florida & Western*.—Circulars from General Manager H. S. Haines announce that Mr. J. M. Lee who recently succeeded Mr. W. P. Hardee as Treasurer of this company, has been appointed to succeed Mr. Hardee also as Treasurer of the Jacksonville Street Railway Co., the People's Line of Steamers on the St. John's and Chattahoochee rivers and the Plant Steamship Line—all subordinate organizations controlled in the interest of this company.

*Texas & Pacific*.—Mr. A. H. Douglass has been appointed Division Master Mechanic, with office at Big Springs, Texas.

*Valley of Ohio*.—Mr. N. F. Wood is appointed Superintendent, and will have charge of transportation. He was recently Superintendent of the Mahoning Division of the New York, Pennsylvania & Ohio.

*Wabash, St. Louis & Pacific*.—The following circular from General Manager A. A. Talmage is dated St. Louis, Oct. 1: "Chas. M. Hays is hereby appointed Assistant General Manager, to take effect this date. He will have charge of all matters connected with the office of General Manager; will approve for him all vouchers, pay-rolls and requisitions; will represent him during his absence, and perform such other duties as may be assigned him by the General Manager."

*Western Maryland*.—The Mayor and City Council of Baltimore have appointed the following city directors in this company: Wm. A. Boyd, Christian Devries, T. Edward Hambleton, John R. Hudgins, John C. Legg, Wm. S. Rayner, S. H. Taggart, Alfred P. Bart. The new directors are Messrs. Hudgins, Legg and Bart, who take the places of Messrs. E. G. Hipsley, James W. McElroy and James C. Wheeldon.

*Wichita & West Line*.—The directors are: S. H. Slater, F. P. Morton, David A. Mitchell, Wichita, Kan.; A. N. Clark, Pratt Center, Kan.; F. W. Wilson, of Preston; R. H. Clement, Leavenworth, Kan.; Walter Scott, Dunkirk, New York.

*Wisconsin Central*.—Mr. F. N. Finney's new position with this company is as Vice-President and Managing Director. He will be the chief executive officer in the West, as Mr. Charles L. Colby, the President, is about to remove from Milwaukee to Boston.

#### PERSONAL.

—Mr. Theodore Warren has resigned his position as Superintendent of the Newport & Wickford Railroad & Steamboat Co.'s line.

—Mr. Thomas H. Munsell, Superintendent of Construction and Repairs of the New York Central Sleeping Car Co., has resigned his position.

—Mr. H. M. Perry has resigned his office as Master Car-Building of the Flint & Pere Marquette road, to accept a sim-

ilar position with the Atchison, Topeka & Santa Fe Railroad at Topeka, Kansas.

—Mr. J. G. A. Meyer, for several years past Chief Draftsman of the Grant Locomotive Works in Paterson, N. J., has accepted a position on the editorial staff of the *American Machinist*, of New York.

—Mr. Charles H. Wood, Assistant Superintendent of the Housatonic Railroad, has been missing from his home in Bridgeport, Conn., for over a week past. No cause for his disappearance is known to exist.

—Mr. O. B. Skinner, Traffic Manager of the Cleveland, Columbus, Cincinnati & Indianapolis road, has received a long leave of absence on account of his health, and will probably go to Southern California for the winter.

—Mr. Robert B. Cable, recently resigned his position as Superintendent of the Susquehanna Division of the New York, Lake Erie & Western road. It is understood that he has been offered an important position on another line.

—Mr. Alfred Noble, recently engaged as an engineer on the extension of the Northern Pacific Railroad, has been appointed Resident Engineer on the construction of the new Harlem River Bridge, to fill the vacancy caused by the resignation of William F. Shunk.

—Mr. Julius Wadsworth, it is understood, asked some time ago to be relieved from his duties as Vice-President of the Chicago, Milwaukee & St. Paul Co., and the board finally agreed to comply with his request, as soon as a proper successor could be found. It is now stated that Mr. Wadsworth will retire very shortly.

—Mr. W. W. Starr, who was recently appointed Superintendent of the Port Royal & Augusta and the other South Carolina lines controlled by the Central Railroad Co. of Georgia, has been for some time Master of Train Service on the Central road, where he made a record for himself as an active and capable officer.

—Mr. N. W. Howson, for 17 years past Master of Machinery of the Cumberland & Pennsylvania Railroad, has resigned that office to accept the position of General Superintendent of the Eames Vacuum Brake Co. at Watertown, N. Y. During the period in which Mr. Howson has had charge of the company's shops at Mt. Savage, Md., he has built there 53 new locomotives, some for the company's own use and others for other railroads.

—Mr. Wm. H. Frailey, Assistant Treasurer of the Pennsylvania Railroad Co., died on Sept. 17. He was a son of Commodore James Madison Frailey, of the United States Navy, and a graduate of the Naval Academy. In 1877 he entered the service of the Pennsylvania Railroad Co. and the Empire Line, and after serving in various positions of honor and trust was appointed Assistant Treasurer in 1881. He was regarded as a man of sound judgment and exceptional financial ability.

—Mr. J. Edwin Conant, of the late firm of Conant & Smith, railroad contractors, of New York, died Sept. 30, aged 56, at Lowell, Mass. Mr. Conant entered business life as a clerk to the Senate Committee on Post Offices and Post Roads during Mr. Pierce's administration. He began constructing railroads just before the war, and since then, with H. J. Kimball, of Atlanta, and others, he built several roads in different sections of the South and West. With his partner, Col. J. Condit Smith, he built the Chicago & Atlantic road. Mr. Conant, who resided at Elizabeth, N. J., was twice married, his second wife and three children by the first wife surviving him.

—The Philadelphia *Ledger* of Oct. 4 says: "Mr. Edward T. Parker, a well-known citizen, died yesterday morning in the Pennsylvania Hospital. He was taken suddenly ill at Fifth and Library streets on Tuesday of last week and was taken to the hospital, where he was said to be suffering from pleurisy. Although he had friends who wished to care for him, he preferred to remain at the hospital. Mr. Parker was a bachelor, aged about 64 years, and a native of Philadelphia. Twelve or 15 years ago he was active in municipal reform movements. He was also well known as a stockholder of the Pennsylvania Railroad Co., and was an active opponent of the management of the road."

—Major Frank S. Bond has resigned his position as President of the Cincinnati, New Orleans & Texas Pacific Co., to accept the office of Vice-President of the Chicago, Milwaukee & St. Paul Co. Major Bond began his railroad service on the Cincinnati, Hamilton & Dayton road some 30 years ago, and subsequently went to the Pennsylvania Railroad, where he held several positions of importance. He left that road to go to the Texas & Pacific, serving as Vice-President of that company when the late Thomas A. Scott was President. In 1883 he was chosen President of the Philadelphia & Reading Co., serving for a year. Early in 1885 he was chosen President of the Cincinnati, New Orleans & Texas Pacific Co., succeeding Mr. John Scott. He is also Receiver of the Vicksburg & Meridian road.

—Mr. James L. Taylor, who has just left the Savannah, Florida & Western road to accept the position of General Passenger Agent of the Richmond & Danville, first entered railroad service in 1867, and from that time until July, 1876, was connected with the Jacksonville, Pensacola & Mobile Railway in various capacities. In January, 1877, he entered the service of the road he has just left, which was then styled the Atlantic & Gulf Railroad, as Auditor of Earnings. In April, 1877, he was appointed General Passenger and Ticket Agent, which he retained until his resignation to accept the appointment as above. Mr. Taylor's position in connection with the terminal line leading to Florida has given him unusual advantages for becoming familiar with the business of other roads, especially throughout the South. He has made a reputation as an active and capable officer, with a wide and thorough acquaintance with the passenger business.

—Mr. George W. Snyder died at his home in Pottsville, Pa., Sept. 25. The Pottsville *Miners' Journal* says of Mr. Snyder: "He was born in Philadelphia June 10, 1805, and was consequently in the 82d year of his age. He served an apprenticeship in the machine works of Rush & Muhlenberg, Philadelphia. He came to Pottsville in the year 1835 and entered into partnership with the late Benjamin Haywood, in the machine business. This partnership, which was a very important one, continued until 1850, when Mr. Snyder assumed charge of the works, Mr. Haywood having removed to California. In connection with their works in Danville, which they established shortly after their partnership, the firm of Haywood & Snyder constructed the machinery for the Mount Iron Co., the Phoenix Iron Co., for Peter Cooper at Trenton, and for Bevan, Humphries & Co., of Allentown. They made the first set of rolls for the manufacture of T-rails in the United States, and constructed the first apparatus for the sawing of hot iron. All this work was done under the personal supervision and direction of Mr. Snyder. In 1844 Mr. Snyder also interested himself in the mining of coal and became quite an extensive operator. Mr. Snyder continued to operate his machine works until the shops were purchased by the Philadelphia & Reading Coal & Iron Co. a few years ago."

## TRAFFIC AND EARNINGS.

## Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Nine months to Sept. 30:				
	1886.	1885.	Inc. or Dec.	P. c.
Buff. N. Y. & P.	\$1,938,580	\$1,758,010	I. \$180,570	10.3
Buff. Roch. & P.	877,626	904,735	D. 27,109	3.0
Cairo, V. & C.	407,755	407,755		
Canadian Pac.	7,038,890	5,609,892	I. 1,428,998	19.1
Central Iowa	932,703	908,703	I. 24,000	2.6
Chi. & Alton	5,743,479	5,789,158	D. 45,679	0.8
Chi. & East. Ill.	1,290,156	1,172,905	I. 117,251	7.4
Chi. Mil. & St. P.	17,303,000	16,546,121	I. 756,879	3.9
Chi. & N. W.	17,913,192	17,191,527	I. 721,665	4.2
C. St. P. M. & O.	4,300,524	4,060,923	I. 239,601	5.9
C. St. L. & C.	1,901,330	1,732,791	I. 168,539	8.5
Cin. W. & Balt.	1,448,719	1,247,676	I. 201,043	16.2
Den. & R. G.	4,740,223	4,415,591	I. 324,632	7.3
Det. Lan. & No.	892,703	875,537	I. 17,167	1.9
Ill. Central	7,368,907	7,612,941	D. 244,034	4.5
Iowa lines	1,233,236	1,161,510	I. 71,726	6.2
Long Island	2,353,195	2,239,216	I. 113,979	5.1
Lou. N. O. & T.	1,067,045	871,365	I. 215,680	24.8
Louisv. & Nash.	10,057,622	10,117,809	D. 60,187	0.5
Mexican Cen.	2,686,485	2,540,283	I. 146,202	5.7
N. Y. & N. E.	1,734,307	990,951	I. 743,356	82.0
Mil. & Northern	457,732	409,752	I. 47,980	11.7
Norfolk & West.	2,291,040	1,944,526	I. 346,514	18.0
Northern Pacific	2,776,039	7,802,685	I. 973,353	12.5
Ohio & Miss.	2,851,293	2,723,342	I. 127,951	4.8
Peoria, Dec. & E.	587,579	541,957	I. 45,622	8.4
St. L. & San F.	3,381,080	3,008,873	I. 372,207	10.2
St. P. & Duluth	1,048,382	917,130	I. 131,252	14.4
St. P. M. & Man.	3,853,194	4,063,589	D. 210,395	5.4
Wab. St. L. & P.	3,320,878	8,510,609	I. 810,209	9.5

Eight months to Aug. 31:				
	1886.	1885.	Inc. or Dec.	P. c.
Atch. T. & S. F.	\$9,586,429	\$9,652,949	D. \$66,520	0.7
Net earnings	4,308,819	4,285,589	I. 23,230	0.5
Canadian Pac.	6,080,824	5,082,465	I. 1,018,359	20.1
Net earnings	2,431,869	1,932,518	I. 499,351	25.8
Chi. Bur. & Q.	16,062,275	16,410,105	D. 347,830	2.1
Net earnings	7,542,332	6,952,904	I. 589,428	8.5
Dan. & Norwalk	1,294,639	1,143,782	I. 150,857	13.2
Net earnings	439,609	331,421	I. 108,188	32.7
L. Rock & Ft. S.	370,634	321,388	I. 49,246	15.3
Net earnings	33,691	25,677	I. 8,014	31.2
L. Rk. M. R. & T.	214,880	185,269	I. 29,611	16.0
Net earnings	990,445	781,239	I. 209,206	26.8
Louisv. & Nash.	8,900,000	8,970,000	D. 70,000	0.8
Net earnings	3,340,116	3,402,897	D. 62,781	1.9
Mexican Central	2,389,893	2,411,703	D. 21,810	0.9
Net earnings	733,721	1,038,204	D. 304,483	29.3
Mich. & Ohio	1,398,887	1,108,816	I. 290,071	26.2
N. Y. & N. E.	2,517,190	2,137,129	I. 380,061	17.8
Net earnings	861,497	701,864	I. 159,633	22.7
Northern Pacific	7,314,639	6,577,731	I. 736,908	11.2
Net earnings	3,363,722	2,976,932	I. 386,790	13.0
Ohio & Miss.	2,444,249	2,354,526	I. 89,723	3.8
Net earnings	678,233	605,086	I. 73,147	12.1
St. Jo. & Ga. I.	733,323	658,851	I. 74,472	11.3
Net earnings	330,198	139,858	I. 190,340	128.8
Shenandoah Val.	448,111	435,812	I. 12,299	2.8
Net earnings	41,315	41,400	D. 85	0.2
South Carolina	672,330	607,822	I. 64,508	10.6
Union Pacific	16,577,112	15,774,488	I. 802,624	5.0
Net earnings	5,215,811	5,392,554	D. 176,743	1.5

Seven months to July 31:				
	1886.	1885.	Inc. or Dec.	P. c.
Atch. T. & S. F.	\$2,167,358	\$1,930,902	I. \$236,456	12.3
Net earnings	703,371	386,446	I. 316,925	82.1
Month of July:				
Atch. T. & S. F.	\$348,131	\$257,934	I. \$90,197	20.9
Net earnings	126,412	62,791	I. 63,621	101.3

Month of August:				
	1886.	1885.	Inc. or Dec.	P. c.
Atch. T. & S. F.	\$1,341,951	\$1,243,908	I. \$98,043	8.0
Net earnings	706,293	635,587	I. 70,706	11.1
Boston & Lowell	473,330	423,108	I. 50,222	11.9
Net earnings	111,578	98,779	I. 12,799	12.9
Canadian Pac.	922,133	802,000	I. 120,133	15.0
Net earnings	380,932	372,538	I. 8,394	2.3
Chi. Bur. & Q.	2,742,003	2,527,872	I. 214,131	8.5
Net earnings	1,529,245	1,102,281	I. 426,964	37.8
Dan. & Norwalk	25,995	24,314	I. 1,681	7.3
Grand Rap. & I.	201,439	178,516	I. 22,923	12.8
Net earnings	78,250	66,658	I. 11,592	17.3
L. Rock & Ft. S.	51,937	30,711	I. 21,226	30.8
Lt. Rock Junction	4,319	3,516	I. 803	22.9
L. Rk. M. R. & T.	27,822	20,342	I. 7,480	36.9
Louisv. & Nash.	1,210,567	1,078,706	I. 131,861	12.2
Net earnings	565,440	400,783	I. 164,657	41.0
L. N. O. & T.	118,404	90,738	I. 27,666	28.5
Net earnings	30,552	4,646	I. 25,906	557.6
Mexican Central	270,090	260,535	I. 9,555	3.7
Net earnings	74,870	125,518	D. 50,648	40.2
Mich. & Ohio	19,335	18,415	I. 920	5.0
Mem. & Charles	119,975	95,824	I. 24,151	25.1
Net earnings	46,433	44,239	I. 2,194	4.9
N. Y. & N. E.	379,543	327,247	I. 52,296	16.0
Net earnings	157,489	153,730	I. 3,759	2.4
Northern Pac.	1,226,358	971,749	I. 254,609	26.3
Net earnings	658,952	506,708	I. 152,244	30.0
Ohio & Miss.	378,099	334,312	I. 43,787	13.1
Net earnings	143,312	135,727	I. 7,585	5.6
Oregon M. & N.	408,081	444,558	D. 36,477	8.2
Net earnings	205,585	214,400	D. 8,815	4.1
St. Jo. & Ga. I.	105,087	89,072	I. 15,995	17.6
Net earnings	49,124	30,018	I. 19,106	63.7
Shenandoah Val.	80,367	69,820	I. 10,547	15.1
Net earnings	25,357	13,157	I. 12,200	91.8
South Carolina	76,525	75,893	I. 632	0.8
Union Pacific	2,587,731	2,330,621	I. 257,110	11.5
Net earnings	1,091,114	1,020,938	I. 70,176	6.9

Month of September:				
	1886.	1885.	Inc. or Dec.	P. c.
Buff. N. Y. & P.	\$234,500	\$238,400	D. \$3,900	1.6
Buff. Roch. & P.	118,805	133,431	D. 14,626	10.9
Cairo, V. & C.	57,511	49,905	I. 7,606	15.2
Canadian Pac.	923,000	823,000	I. 100,000	12.3
Central Iowa	128,976	128,976		
Chi. & Alton	770,124	755,825	I. 14,299	1.9
Chi. & Atlantic	174,029	121,479	I. 52,550	43.4
Chi. & East. Ill.	170,682	169,714	I. 968	0.6
Chi. Mil. & St. P.	2,554,000	2,273,277	I. 280,723	12.4
Chi. & N. W.	2,887,200	2,532,200	I. 355,000	14.0
C. St. P. M. & O.	618,800	601,400	I. 17,400	2.9
C. St. L. & C.	248,275	219,256	I. 29,019	13.2
Cin. W. & Balt.	203,710	152,685	I. 51,025	33.4
Den. & R. G.	627,538	563,396	I. 64,142	11.4
Det. Lan. & No.	109,787	117,899	D. 8,112	6.9
Illinois Central	926,106	912,811	I. 13,295	1.4
Iowa lines	182,482	157,330	I. 25,152	16.0
Long Island	330,255	315,788	I. 14,467	4.6
Lou. N. O. & T.	126,000	100,130	I. 25,870	25.8
Louisv. & Nash.	1,067,410	1,144,004	D. 76,594	6.7
Mexican Central	296,500	238,580	I. 57,920	24.3
Mil. & Northern	312,600	144,805	I. 167,795	115.9
Norfolk & West.	59,991	46,299	I. 13,692	29.7
Northern Pacific	300,968	246,825	I. 54,143	21.9
Ohio & Miss.	406,984	368,816	I. 38,168	10.3
Peoria, Dec. & E.	89,654	78,654	I. 11,000	13.8
St. L. & San F.	488,500	393,609	I. 94,890	24.1
St. P. & Duluth	204,046	172,575	I. 31,471	18.1
St. P. M. & Man.	823,397	740,845	I. 82,552	11.1
Wab. St. L. & P.	1,211,000	1,139,000	I. 72,000	6.3

\* Deficit.  
Weekly earnings are usually estimated in part, and are subject to correction by later statements. The same remark applies to early statements of monthly earnings.

## Buffalo Grain Traffic.

Buffalo grain receipts by lake up to Sept. 30 were as fol-

lows for four years past, flour in barrels and grain in bushels, flour being reduced to wheat in the totals:

	1886.	1885.	1884.	1883.
Flour	3,116,703	1,606,870	1,667,302	1,506,154
Grain	53,427,169	37,314,208	37,006,439	48,657,649

Total, bushels 60,010,684 45,948,603 45,948,603 56,108,419

The total increase this year over last is 23,762,081 bushels, or 52 per cent. The most notable point is the great increase in flour receipts.

For the same period shipments eastward of grain received by lake were as follows:

	1886.	1885.	1884.	1883.
By canal.....	34,541,743	23,973,460	26,556,318	32,345,675
By rail .....	14,889,619	8,794,993	7,707,372	10,434,590

sioner Faithorne's office Friday for the purpose of perfecting the details of the new pooling agreement and to provide for the arbitration of such percentages as could not be fixed by agreement, has been postponed until Oct. 13. The alleged reason for the postponement is that some of the managers are out of town and consequently could not attend. The true reason, however, is said to be that, before taking any more steps toward the perfection of the Western freight pool, it is desired to await the result of the meeting of Northwestern managers in this city next week to consider the plan for the formation of a Northwestern Traffic Association."

#### Chicago Shipments Eastward.

The report of the Board of Trade for the week ending Oct. 2 gives the shipments by the seven pool lines and also the Kan-  
kakee Line (Cincinnati, Indianapolis, St. Louis & Chicago) as follows, in tons, tonnage to local as well as through points being included:

	Mich. Lake	Ft. C. St. L.	Nickel Kan-				
C. & G. T.	Cen. Shore.	Wayne.	& P. B. & O.	Plate. kakee.			
4,019	6,033	7,564	4,157	6,717	1,780	3,256	2,596
11.1	16.7	21.0	11.5	18.6	4.9	9.0	7.2

The second column gives the percentage carried by each line. The total was 36,123 tons, against 62,410 tons in the same week last year.

#### Central Traffic Association.

The Chicago meeting last week closed on Sept. 30. Arguments were presented to Arbitrator Wilson upon the general question of publishing in the joint rate sheets the differential rates which have been or may be granted to the various lines in the Association. The matter was taken under advisement by the Arbitrator.

The meeting closed by the adoption of a resolution authorizing the Assistant Commissioner to redeem at full tariff all tickets issued by any line member of the Association for transportation between any points covered by the association contract, and also to redeem the tickets issued by foreign roads for transportation between association points.

A Chicago dispatch of Oct. 6 says that the Ohio & Mississippi Co. has given final notice of its withdrawal from this Association. This action has been threatened before, but the company was persuaded to withhold the notice.

#### Lake and Canal Rates.

The Buffalo Commercial Advertiser says: "It is not strange that the owners of vessels and of canal-boats are feeling well satisfied with themselves and the rest of mankind this season. A good vessel is a very desirable piece of property to own just now, for vessels are making money fast. Lake freights have ruled at remunerative rates all the season thus far, and bid fair to continue at paying figures to the end. The average rate on wheat and corn from Chicago to Buffalo, by lake, and the average on the same cereals to New York by canal, for September, was as follows in the years named:

	Lake.		Canal.	
	Wheat.	Corn.	Wheat.	Corn.
	Cents.	Cents.	Cents.	Cents.
1886	4.5	4.2	6.0	5.5
1885	4.6	4.1	6.0	5.5
1884	4.2	3.9	4.7	4.2
1883	4.5	4.2	6.3	5.9
1882	4.4	4.1	5.8	5.2
1881	4.4	3.9	4.8	4.3
1880	4.4	3.9	5.9	5.3
1879	5.3	4.8	8.1	7.4
1878	4.4	4.1	8.0	7.1
1877	4.0	3.4	7.7	6.7
1876	2.6	2.2	6.2	5.6
1875	2.4	2.2	7.0	6.5

"The gratifying feature of this season's business is the steadiness of the market. During September, for example, the rates on wheat at Chicago for Buffalo ranged nearly all the month between 4 and 4½ cents. The same general statement regarding steadiness is also true of canal freights. The month opened with the rate on wheat to New York at 6 cents; it closed at the same figure. The highest rate for September was 6½ cents, and the lowest 5½ cents. Up rates on coal were also reasonably satisfactory, ranging from 70 cents to \$1 a ton."

#### Cotton.

Cotton movement for the month ending Oct. 1 is reported by the Commercial and Financial Chronicle, as follows, in bales:

	1886.	1885.	Inc. or Dec.	P. C.
Interior markets:				
Receipts.....	255,927	265,386	D. 9,459	3.6
Shipments.....	224,572	210,814	I. 17,758	8.4
Stock, Oct. 1.....	72,654	71,882	I. 772	1.1

	1886.	1885.	Inc. or Dec.	P. C.
Exports.....	389,325	435,128	D. 45,803	10.5
Stock, Oct. 1.....	155,231	120,843	I. 34,388	28.4
Stock, Oct. 1.....	330,033	323,671	I. 6,362	1.9

The Chronicle says: "Our tables show: 1. That the total receipts from the plantations since Sept. 1, 1886, are 413,919 bales, in 1885 were 491,160 bales; in 1884 were 457,928 bales.

"2. That, although the receipts at the outports the past week were 156,465 bales, the actual movement from plantations was 170,385 bales, the balance going to increase the stocks at the interior towns. Last year the receipts from the plantations for the same week were 179,093 bales and for 1884 they were 182,063 bales."

#### Traffic Notes.

The total earnings on business in the Southwestern Railway Association in July were \$680,948; in August, \$838,744; a total of \$1,519,692 for the two months. Of the total earnings for the two months \$884,393 were on west-bound business and \$635,299 on east-bound business.

It is said that the Milwaukee & St. Paul is shipping freight to Kansas City by way of Council Bluffs and the Union Pacific. This is made possible by the completion of the Union Pacific's Manhattan & Blue Valley Branch, which gives it a fairly direct line between Omaha and Kansas City. A report of the withdrawal of the Pennsylvania from the Trunk Line pool is contradicted by authority.

There are reports of a combination of express companies to end the present war of rates and to crush, if possible, the new Erie Express.

A reported purchase of the Inman Atlantic Steamship line in the interest of the Pennsylvania Railroad Co. is emphatically denied by the officers of that company.

The Illinois Railroad Commission is taking testimony this week on complaints of discrimination by the railroads in the matter of rates on dressed beef.

Commissioner Faithorne has made the following award of business in the Western range cattle pool: Chicago & Northwestern, 60 per cent.; Burlington, 16; Rock Island, 10½; Milwaukee & St. Paul, 10½; Wabash, 3 per cent.

#### Indianapolis Car Movement.

The number of cars received and forwarded at Indianapolis has been:

	Sept. 4.	Sept. 11.	Sept. 18.	Sept. 25.	Oct. 2.
1886—Total.....	21,103	21,113	21,198	21,301	22,488
Loaded.....	16,390	17,123	18,546	18,648	18,701
1885—Total.....	20,492	.....	.....	21,240	23,996
Loaded.....	15,966	15,567	.....	18,602	19,107

The movement of freight continues heavy, and the only interruption is the difficulty of obtaining cars for local traffic.

#### RAILROAD LAW.

##### Right to Condemn Property of Another Railroad Company.

The Pennsylvania Supreme Court on Oct. 4 gave its decision in the case of the Junction Railroad Co. against the Allegheny Valley Co., appeal from the Court of Common Pleas. Of this decision the Pittsburgh Chronicle-Telegraph says:

"This is the famous fight between the Junction and the Allegheny Valley Railroad in regard to the trackage on the bank of the Allegheny River in Pittsburgh, which would have been worth \$80,000 a year revenue to the Junction road. The Valley Co. claimed that the construction of a line for the Junction road down the river bank would ruin its yards, tracks, roundhouse and other property. The Junction wished to extend a line from Negley's Run to the foot of Eleventh street. The Supreme Court says that the court below was right in deciding that the case was not a crossing case which could come under the act of 1871.

"While the franchises of a corporation are property, and may be taken under the power of eminent domain, yet when property has been already taken by another corporation for another use, it cannot be taken by another company except by express grant or by necessary implication. It was argued that the yard of the Allegheny Valley Co. was larger than it now needed, or would ever need. The location of the Junction Co. is merely one of economy and not the only one it can make. They can construct the road by another route. It is a mere question of money and engineering skill. It is not entitled to run through the plaintiff's yard and cripple its facilities for handling the business merely to save money."

##### Receivership—Rental of Leased Lines.

The following is the text of the opinion of Judge Jackson of the Circuit Court of the United States for the Southern District of Ohio, Western Division, in the matter of the petition of the Cincinnati, Sandusky & Cleveland Co., and the Columbus, Springfield & Cincinnati Co., in the suit of John Hurd vs. the Indiana, Bloomington & Western Co.:

"The Court will not retain the leased roads without complying with the requirements of the lease. In respect to the due rents, the provisional order heretofore made is made upon the supposition that they should be paid by the Receiver. This Court interrupted the payment by its action of taking possession of the property. The report of the Receiver showed that it had been regularly paid. Every presumption is in favor of the fact that it would have been paid but for the action of this Court and there was enough to pay it, that payment being applied to the due rents.

"This Court will make this further order in respect to this property that the Receiver pay into the registry of this Court 33½ per cent. of the gross earnings, and will make this further order so that he may keep a separate account of the earnings of this property just as is required by the terms of that lease in its letter and in its spirit, and as between lessor and lessee; that he shall turn into the registry of this Court 33½ per cent. of the gross earnings, on the basis of the decree of the Supreme Court of Ohio, out of which the minimum and the quarterly payments will be now handed over to the lessor, the balance of the proceeds of the earnings of this road, with whatever else is necessary from the main line, he must appropriate to put this road in first-class condition, and strictly according to the term of that lease. This is a debt that this Court owes to the public in the management and direction of this property, and it is a debt that this Court owes to the lessors under the terms of that lease, and they have reserved the right at all times to apply to this Court and have the property restored when that is not done. This Court will not hold that property and allow it to be used to the disparagement of that property and to the injury of the lessor, to the injury and risk of the public, in order to benefit these outside parties. The Receiver had just as well understand that he is not to be partisan in this transaction; he is the officer of the Court, he is the agent of nobody, he is the representative of all the interests, and if he takes sides he may be in danger of a removal. If I have understood the cause correctly, this meets the questions under consideration. Whatever is over the rental and quarterly payment, I mean the gross earnings, will be reserved for the future adjudication of the Court, as counsel have specially requested that briefs may be filed by the Central Trust Co. Out of the one-third of the earnings which the Receiver must pay into this Court you take your rental of \$25,000, and whatever may be due you on the quarterly statement, whatever of the 33½ per cent. there may be in excess of that will be the subject of further adjudication between you and the parties in Court."

#### OLD AND NEW ROADS.

Arizona Central.—Work is progressing steadily on this road, and the track is now reported laid for 20 miles from Chino, Ari., the junction with the Atlantic & Pacific road.

Atchison, Topeka & Santa Fe.—The statement for August and the eight months to Aug. 31 is as follows:

	August.		Eight months.	
	1886.	1885.	1886.	1885.
Miles worked.....	2,418	2,393	2,416	2,377
Earnings.....	\$1,241,951	\$1,243,908	\$9,586,429	\$9,652,949
Expenses.....	635,658	608,321	5,277,610	5,367,360
Net earnings.....	\$706,293	\$635,587	\$4,308,819	\$4,285,589

For the eight months the gross earnings decreased \$66,250, or 0.7 per cent., and the expenses \$89,750, or 1.7 per cent., the result being a gain of \$23,230, or 0.5 per cent., in net earnings.

The Great Bend extension has been completed and opened for business from Great Bend, Kan., on the main line west to Rush Centre, a distance of 32 miles. The new terminus is 9 miles beyond the point last noted.

Baltimore & Eastern Shore.—A meeting was held in Baltimore this week to make arrangements for building this road, and for securing a guarantee of its bonds by the city, if possible. Chief Engineer Eichelberger has completed the preliminary surveys of the line from Broad Cove, Md., on the Eastern Shore of Chesapeake Bay, to Salisbury. The estimated cost of building and equipping the road, including a transfer steamer, is \$727,000. The new road will be 54 miles long from Salisbury to Broad Cove. At Salisbury it will connect with the Wicomico & Pocomoke Railroad, which runs thence to Ocean City, 90 miles, and at Broad Cove cars will be transferred to connect with the Baltimore & Annapolis Short-Line Railroad. The continuous road, therefore, from Ocean City to Baltimore, taking in Salisbury, Easton, Preston, St. Michael's and a number of other towns in a fertile region, will be 110 miles.

Baltimore & Harrisburg.—The stockholders of the Baltimore & Hanover Railroad Company, at Hampstead, Md., Oct. 2, unanimously voted to ratify the terms of the consolidation of their company with the Hanover, Hanover Junction & Gettysburg, and the Bachman Valley companies, under the name of the Baltimore & Harrisburg Railroad Co. The stockholders are to receive equal shares of the stock of the new corporation. It is in negotiation for the Western

Maryland to operate the consolidated roads, and to guarantee 5 per cent. dividends on their stock.

Baltimore & Ohio.—This company has opened its new freight line from New York. Freight is received at the company's new pier, No. 27, East River, between the bridge and Fulton Ferry, and is carried thence on floats around the city to the piers of the Central Railroad of New Jersey.

Boston & Lowell.—The Boston Herald publishes the following statement of this company for the month of August:

	1886.	1885.	Increase.	P. C.
Earnings.....	\$473,330	\$423,108	\$50,222	11.9
Expenses.....	361,752	324,329	37,423	11.2
Net earnings.....	\$111,578	\$98,779	\$12,799	12.9

The Herald also says that the company has made arrangements for the opening of a through line to Boston in connection with the Canadian Pacific road.

Burlington, Cedar Rapids & Northern.—On the Sioux Falls Extension track is now laid for 26 miles from the junction with the Iowa Falls Division at Ellsworth, and 16 miles beyond the point last noted.

Burlington, Salina, Hutchinson & Southern.—This company has been incorporated in Kansas to build a road from the north line of the state in a southerly direction through the counties of Nemaha, Marshall, Washington, Republic, Cloud, Clay, Ottawa and Salina, to the city of Salina, and southerly through the counties of Salina, McPherson, Rice and Reno, to Hutchinson, and thence through the counties of Reno, Kingman, Pratt, Comanche, Barbour and Harper to the south line of the state. Estimated length of road, 300 miles.

Cairo, Vincennes & Chicago.—This line continues to report a large increase in business. In September the gross earnings showed a gain of 31 per cent., notwithstanding suspension of through traffic for 9 days in consequence of fire in the tunnel.

Canadian Pacific.—This company's statement of earnings and expenses for August and the eight months to Aug. 31 is as follows:

	August.	Eight months.
	1886.	1885.
Gross earnings.....	\$922,133	\$6,080,844
Working expenses.....	542,101	3,948,955
Net profit.....	\$380,032	\$2,131,889

"The gain in net profits over the same period last year is for August \$7,500; and from Jan. 1 to Aug. 31, it is \$199,351.

"The gross earnings for August include \$61,591 for the carriage of construction material, as against \$81,000 during the same month last year, but as it was carried at absolute cost, the net result is not affected."

Central Pacific.—A San Francisco dispatch of Oct. 6 says: "This company is pushing the Oregon Branch, and have it definitely located as far as Klamath River. They are surveying up the Klamath River into the Klamath Lake country, as they are anxious to reach the extensive and fertile region of Eastern Oregon. The engineers' reports of the feasibility and practicability of the route are very encouraging, and it is claimed that the proposed route, penetrating Eastern Oregon by way of the Klamath River and lakes, will be constructed at an early date."

Chicago, Burlington & Quincy.—The statement for August and the eight months to Aug. 31 is as follows:

	August.		Eight months.	
	1886.	1885.	1886.	1885.
Earnings.....	\$2,748,175	\$2,224,303	\$16,002,275	\$16,410,105
Expenses.....	1,218,930	1,122,022	9,059,943	9,457,201
Net earnings.....	\$1,529,245	\$1,102,281	\$7,542,332	\$6,952,904

For the eight months the gross earnings increased \$192,170, or 1.2 per cent., and the expenses decreased \$397,258, or 4.2 per cent., the result being a gain of \$589,428, or 8.9 per cent., in net earnings.

Chicago, Madison & Northern.—Chief Engineer Randolph, of this road, last week stated that about 76 miles of the survey for this road between Freeport and Chicago had been located east of Freeport, and the remainder of this line east of the Fox River to Chicago would be located soon. Also invitations for contracts on the portion located are to be issued at once, so that they may be opened by Oct. 14. The line as run will be about 108½ miles in length. Engineer Randolph said that probably all of the light grading between Freeport and Chicago would be finished this Fall before freezing weather sets in. A large part of this grading on this company's line north of Freeport to Monroe is already completed, and it is expected that trains will be running to this latter place by New Year's. Contracts for the grading north of Monroe to Chicago will soon be let. Mr. Randolph said he presumed it would be September, 1887, when the road all the way from Madison to Chicago would be fully completed and ready for business.

Chicago, Milwaukee & St. Paul.—On the new line from Astor, Ia., on the Council Bluffs line, to Sioux City, work is now well advanced. Tracklaying was recently begun at Sioux City, and the rails are reported down for 12 miles.

The extension from Scotland, Dak., to Mitchell, 48 miles, was opened for traffic Oct. 4. It is part of the Sioux City & Dakota Division, and makes a line 138 miles long, from Sioux City to Mitchell. The new stations, with the distances from Scotland, are: Tripp, 14; Parkston, 26; Ethan, 36; Mitchell, 48 miles.

The extension from Glencoe, Minn., to Hutchinson is now open for business. It is 14 miles long, will be known as the Hutchinson Line, and will be part of the Hastings & Dakota Division.

A branch from Tripp, Dak., on the Scotland-Mitchell line, west to Armour is nearly finished, and will probably be opened about Oct. 11.

Cleveland, Columbus, Cincinnati & Indianapolis.—The statement for July and the seven months to July 31, is as follows:

	July.		Eight months.	
	1886.	1885.	1886.	1885.
Earnings.....	\$348,131	\$287,934	\$2,167,358	\$1,930,902
Expenses.....	221,719	225,142	1,463,986	1,544,455
Net earnings.....	\$126,412	\$62,792	\$703,372	\$386,447
Interest, etc.....	68,727	71,678	482,842	464,042
Surplus.....	\$57,685	\$8,886	\$220,530	\$77,595

\* Deficit.

Expenditures for additions to property this year were \$16,439 for July and \$120,980 for the year, leaving a net surplus of \$41,246 for July and \$99,550 for the eight months.

Cleveland & Marietta.—This company gives notice that "holders of certificates issued by the Receiver of the Cleveland & Marietta Railroad Co. are requested to present them for payment to the Metropolitan Trust Co. of New York. Interest ceases from Oct. 5. The assessment for expenses of foreclosure under the bondholders' agreement of Jan. 15, 1886, will be refunded upon application to the

above Trust Co., and presentation of original receipts given for the bonds and assessment."

**Council Grove, Osage City & Ottawa.**—On this line track has been laid from Ottawa, Kan., west to Osage City, 30 miles, and it is to be completed to Council Grove by January next. The road is controlled by the Missouri Pacific.

**Columbus Belt.**—This company has been organized in Columbus, O., to build a belt or connecting road around that city.

**Delaware & Hudson Canal Co.**—This company has issued a circular pursuant to the action at the annual meeting of stockholders, held May 8, 1883, authorizing the increase of its capital stock from time to time for the purpose of retiring certain specified bonds as the same should become due. The circular says:

"Under the authority thus conferred—and for the purpose of retiring bonds of the Union Coal Co., guaranteed by this company, falling due Jan. 1, 1887, amounting to \$1,000,000, and which bonds were included in the order above alluded to—the board of managers hereby offer, at par, to the stockholders of record at the closing of the books on Sept. 30, 10,000 shares of the capital stock of this company, each shareholder being entitled to subscribe for one new share of new stock for 23½ shares then held. Subscriptions will be received by the treasurer of the company at its office in this city from Oct. 1 to Oct. 12. Payments will be required as follows on new shares: 25 per cent. on Oct. 15; 75 per cent. on Dec. 14.

**Des Moines & Fort Dodge.**—A special meeting of the stockholders is called at Des Moines, Ia., Oct. 11, "for the purpose of confirming the election of directors and other matters done at previous meetings of the stockholders held in the city of New York, and for other business."

**East & West, of Alabama.**—It is reported that a controlling interest in this road has been sold to the East Tennessee, Virginia & Georgia Co., and that the line will be changed from 3 ft. to standard gauge. The road is in operation from Cartersville, Ga., west to Broken Arrow, Ala., 110 miles, and an extension to Birmingham, Ala., is in progress.

**Fort Worth & Denver City.**—Grading is now well advanced on the extension of this road from its present terminus at Harrold, Tex., northwest to Quanah, 44 miles. Tracklaying is in progress and the rails are reported down for 9 miles.

**Georgia Pacific.**—Work is progressing well on the unfinished section of this road between Coalburg, Ala., and Day's Gap. The grading is nearly all completed and most of the bridges are ready. Tracklaying has been begun at both ends, and the rails are laid for 5 miles from Coalburg.

A report that contracts had been let for an extension from Columbus, Miss., west is contradicted. The line of that extension has not yet been finally located.

**Grand Rapids & Indiana.**—The gross and net earnings for August and eight months, were as follows:

	August.	1885.	Eight months.	1885.
Earnings.....	\$201,439	\$178,516	\$1,294,639	\$1,215,326
Expenses.....	123,189	111,858	855,030	883,905
Net earnings.....	\$78,250	\$66,658	\$439,609	\$331,421

For the eight months the gross earnings increased \$79,313, or 6.4 per cent., and the expenses decreased \$28,875, or 3.2 per cent., the result being a gain of \$108,188, or 32.7 per cent., in net earnings.

**Interstate Belt.**—This company has been incorporated in Kansas to build a railroad from Kansas City, Kan., and running up the Missouri River to a point known as the old town of Quindaro, thence in a southerly direction to a point in the Kansas River Valley, thence down the river to a point near its mouth; also, a branch line, leaving the main line near Quindaro and running in a southeasterly direction through Kansas City, Kan., to a point at or near the line between Kansas and Missouri. Estimated length of road, 20 miles.

**Little Rock, Mississippi River & Texas.**—A company has been organized to build a loop line from this road at Varner, Ark., east to the Mississippi and thence south to Arkansas City, the terminus of the present line. The distance is 46 miles.

**Los Angeles & San Gabriel Valley.**—This road has the grading now completed to the San Gabriel River, 8 miles eastward from the late terminus at Santa Anita, and 23½ miles from Los Angeles, Cal. Track is laid to Monrovia, 4 miles beyond Santa Anita, and work is progressing.

**Louisville, Cincinnati & Dayton.**—It is said that work will soon be begun on this projected line. It is to run from a point opposite Louisville, Ky., along the north side of the Ohio to Aurora, Ind., and thence to Hamilton and Middleton, O. It will be about 150 miles long.

**Louisville, Evansville & St. Louis.**—In the United States Circuit Court in Louisville, Ky., Oct. 5, an order was entered directing the transfer of this road to the bondholders who bought it at the foreclosure sale. The Receiver was directed to pay off from the purchase money all debts incurred by him in operating the road.

**Louisville & Nashville.**—The statement for August and the two months of the fiscal year from July 1 to Aug. 31 is as follows:

	August.	1885.	Two months.	1885.
Earnings.....	\$1,200,467	\$1,078,796	\$2,490,341	\$2,156,128
Expenses.....	685,227	678,013	1,408,548	1,373,901
Total earnings.....	\$505,240	\$400,783	\$1,081,793	\$782,227

For the two months the gross earnings increased \$324,213, or 15.2 per cent., and the expenses \$34,647, or 2.5 per cent., leaving a gain in net earnings of \$289,566, or 38.0 per cent. Expenditures for construction this year were \$39,558 for the month and \$60,429 since July 1, leaving net balances of \$465,782 for August and \$991,364 for the two months.

**Louisville, New Albany & Chicago.**—Grading is now nearly completed on the branch from Orleans, Ind., southward to Blue Lick Springs. Track has been laid from Orleans to Paoli, 10 miles, and the remaining 11 miles will probably be completed this month.

**Louisville & St. Louis.**—This company has filed articles of incorporation to build a railroad from Mt. Vernon, Ill., to East St. Louis, a distance of about 80 miles. It is meant to be an extension of the Louisville, Evansville & St. Louis road.

**Memphis & Charleston.**—The gross and net earnings for August, and for two months of the fiscal year, have been as follows:

	August.	1885.	Two months.	1885.
Earnings.....	\$119,375	\$95,824	\$214,838	\$179,640
Expenses.....	73,192	63,880	148,065	132,620
Net earnings.....	\$46,183	\$31,944	\$66,773	\$47,020

For the two months the gross earnings increased \$35,198, or 19.6 per cent., and the expenses \$15,445, or 11.6 per cent.,

the result being a gain of \$19,753, or 42.0 per cent. in net earnings.

**Mexican Central.**—The statement for August and the eight months to Aug. 31 is as follows:

	August.	1885.	Eight months.	1885.
Earnings.....	\$270,090	\$260,535	\$2,389,895	\$2,411,703
Expenses.....	195,222	135,016	1,656,174	1,373,499
Net earnings.....	\$74,868	\$125,519	\$733,721	\$1,038,204

The increase in expenses is due to increased renewals. The earnings given above are in Mexican currency; reduced to United States money, the net earnings for the eight months this year have been about \$550,000.

**Missouri Pacific.**—The gauge of this company's East Line & Red River Branch was changed from 3 ft. to standard on Sept. 26. The road changed was from McKinney, Tex., to Greenville, 32 miles.

**Mobile & Girard.**—The lease of this road to the Central Railroad & Banking Co., of Georgia, has been formally executed. The lease is for 99 years, and dates from June 1, 1886, from which time the stockholders will begin to draw their dividend of 1½ per cent., guaranteed by the Central. The Central holds certain stock in trust, which will be transferred to the proper parties, and all those holding preferred stock will receive two shares for one in common stock.

**Mobile & Ohio.**—This company last week changed the gauge of 90 miles of its leased St. Louis & Cairo line from 3 ft. to standard gauge. The section changed was the north end, from East St. Louis to Murphysboro. The remaining 66 miles, from Murphysboro to Cairo, will be changed by Nov. 1, when through trains will be put on between St. Louis and Mobile.

**New York Central & Hudson River.**—The statement for the quarter ending Sept. 30 is as follows, this year's figures being partly estimated:

	1888.	1885.	Increase.	P. c.
Earnings.....	\$8,708,000	\$6,053,415	\$2,654,585	43.8
Expenses.....	5,241,000	4,500,207	740,793	16.5
Net earnings.....	\$3,467,000	\$1,553,208	\$1,913,792	123.2
First charges.....	1,926,000	1,463,726	462,274	31.6
Profit.....	\$1,541,000	\$89,482	\$1,451,518	—
Dividends.....	894,000	447,141	446,859	100.0

Surplus or deficit..... \$847,000 D. \$357,659 \$1,004,659

The profit for the quarter was 1.73 per cent. on the stock this year, against 0.10 per cent. last year; the dividend was 1 per cent. this year and 0½ per cent. last year. Expenses were 60.18 per cent. of gross earnings, against 74.34 per cent. last year. A statement for the fiscal year will be found elsewhere.

**New York & New England.**—The statement for August and the eleven months of the fiscal year from Oct. 1 to Aug. 31 is as follows:

	August.	1885.	Eleven months.	1884-85.
Earnings.....	\$379,543	\$327,247	\$3,477,914	\$2,937,333
Expenses.....	222,054	173,517	2,238,199	2,010,435
Net earnings.....	\$157,489	\$153,730	\$1,239,715	\$926,898

For the eleven months the gross earnings increased \$540,581, or 18.4 per cent., and the expenses \$227,764, or 11.7 per cent., the result being a gain of \$312,817, or 33.8 per cent., in net earnings.

The excitement in the stock continues, and all sorts of rumors are current, both probable and improbable. The Boston & Albany, the New York, New Haven & Hartford and the Manhattan Elevated companies have been prominently connected by rumor with the buying, although the officers of all those companies have denied the reports. The reported results range all the way from a consolidation, including the Boston & Albany, the New Haven and the New York & New England, down to the prospective squeezing of somebody in a stock market "corner."

A New Haven dispatch of Oct. 6 reports President Watrous of the New York, New Haven & Hartford Co. as saying that it was true that gentlemen representing the Boston & Albany and the New York & New England were to meet one or two directors of the New Haven Co., including him, to discuss some proposal they had informed him they intended to make. "What that proposal will be, I am ignorant of," said Mr. Watrous. "One thing is certain, I shall oppose, with all my energy, the acceptance of any proposal that will advance New York & New England stock to a point where it will pay 4 per cent. and sell above par. There is no question but that the stockholders of the road I represent would be losers if such an arrangement were effected. Of course, if the Boston & Albany and the New York & New England make a proposal that will be of mutual advantage, I should be in favor of consolidation, provided legislative approval could be obtained."

**Northern Pacific.**—The statement for August and the two months of the fiscal year from July 1 to Aug. 31 is as follows:

	August.	1885.	Two months.	1885.
Earnings.....	\$1,226,358	\$771,289	\$2,326,384	\$1,971,300
Expenses.....	567,406	404,581	1,132,906	915,148

Net earnings..... \$658,952 \$366,708 \$1,193,478 \$1,056,152

For the two months the gross earnings increased \$355,084, or 18.0 per cent., and the expenses \$217,758, or 23.8 per cent., the result being a gain of \$137,326, or 13 per cent., in net earnings.

The land sales included for the two months 41,744 acres and a number of town lots. The total amount of these sales was \$123,330.

**Ohio & Mississippi.**—The statement for August and the eight months to Aug. 31 is as follows:

	August.	1885.	Eight months.	1885.
Earnings.....	\$378,090	\$334,312	\$2,444,249	\$2,349,526
Expenses.....	234,787	198,585	1,766,018	1,749,490
Net earnings.....	\$143,303	\$135,727	\$678,231	\$600,036

For the eight months the gross earnings increased \$89,723, or 3.8 per cent., and the expenses \$16,558, or 0.9 per cent., the result being a gain of \$73,167, or 12.1 per cent., in net earnings.

**Ohio River.**—It is said that negotiations are in progress for an agreement under which the Pennsylvania Co. will have the use of this road when completed, and will exchange traffic with it. The road now extends from Wheeling, W. Va., to Parkersburg, 90 miles, and an extension from Parkersburg to Point Pleasant, 80 miles, is nearly completed.

**Oregon Railway & Navigation Co.**—The statement for August and the two months of the fiscal year from July 1 to Aug. 31 is as follows:

	August.	1885.	Two months.	1885.
Earnings.....	\$460,081	\$443,458	\$881,962	\$849,334
Expenses.....	254,496	225,908	502,689	436,010
Net earnings.....	\$205,585	\$217,460	\$379,273	\$413,324

Expenses include taxes. For the two months the gross

earnings increased \$32,628, or 3.8 per cent., but the expenses increased \$66,659, or 15.3 per cent., the result being a decrease of \$34,031, or 8.2 per cent., in net earnings.

**Owensboro & Nashville.**—Track is reported laid on a short branch from this road to the Mud River coal mines in Muhlenburg County, Ky. This branch is about 3 miles long.

**Parsons & Pacific.**—Work is progressing on this line, and the track is now reported laid from Parsons, Kan., on the Missouri, Kansas & Texas road, southwest to Mound City, a distance of 14 miles. Tracklaying is in progress, and the grading is well advanced toward Coffeyville.

**Pennsylvania.**—A dispatch from London, England, Oct. 5, says: "At a meeting of English holders of Pennsylvania Railroad securities to-day a resolution was adopted declaring that the time had come to distribute among the shareholders a portion of the company's reserve funds, and declaring also that the directors of the company ought to agree upon some definite principle of division of the future earnings of the road."

**Philadelphia & Reading.**—The suit of William M. Robinson against this company for foreclosure under the general mortgage, was taken up for argument before Justice Bradley in Philadelphia, Oct. 5, in the United States Circuit Court. After hearing the argument of Richard C. Dale, for the complainant, and Thomas Hart, Jr., for the defense, Justice Bradley delivered the opinion of the Court. He overruled Mr. Gowen's plea as to the invalidity of the request as made by the holders of one-tenth in amount of the general mortgage bonds, and held that the complaint was entitled to a decree. A reference will be made to a Master to ascertain the entire amount of the company's bonds now outstanding, and counsel will prepare a decree to be submitted to the Court.

**Portland & Willamette Valley.**—Track has now been laid from Elk Rock, 6 miles from Portland, Ore., southward 14 miles to Chehalis Gap. Grading is completed and all the bridges on the line between Elk Rock and Dundee Junction are finished. The road is being extended from Elk Rock into Portland, where it will connect with the other lines entering the city. The road is an extension of the Oregonian Railway.

**Shenandoah & Allegheny.**—Argument on a decree of foreclosure and sale was heard in the United States Circuit Court in Pittsburgh, Sept. 30. At the conclusion of the argument it was decided that the counsel for all parties should confer and mutually agree upon an amended form of the decree, all disputed points to be settled by the Court.

**Shenandoah Valley.**—The statement for August and the eight months to Aug. 31 is as follows:

	August.	1885.	Eight months.	1885.
Earnings.....	\$80,367	\$69,820	\$448,111	\$435,812
Expenses.....	55,010	56,663	400,796	437,212
Net earnings.....	\$25,357	\$13,157	\$44,315	\$98,601

\* Deficit.

For the eight months the gross earnings increased \$12,290, or 2.8 per cent., and the expenses decreased \$30,416, the result being a gain of \$42,715 in net earnings.

**Sonora.**—The statement of this Mexican road for July and the seven months to July 31 is as follows:

	July.	1885.	Seven months.	1885.
Earnings.....	\$18,710	\$26,014	\$161,209	\$175,524
Expenses.....	21,139	18,933	135,771	136,863
Net earnings.....	\$2,429	\$7,081	\$25,438	\$38,661

\* Deficit.

The road is controlled by the Atchison, Topeka & Santa Fe Co. The earnings given above are in Mexican currency.

**Southern Pacific.**—On the extension of the Northern Division track is now laid to the old Mission San Miguel, 65 miles south by east from the old terminus at Soledad, Cal., and 20 miles beyond the last point noted. The most difficult part of this extension is now finished, and work will proceed rapidly.

On the southern end of the new coast line a large force is now employed on the grading between the main line at New Hall, Cal., and Ventura.

**Strikes.**—The freight brakemen of the Pine Creek Railroad in Pennsylvania are on strike, because of an order which requires them to remain on the outside of cars while on duty. Owing to the interference of the men all efforts to get out trains were abandoned Saturday, and only two trains were moved on Monday.

A Cleveland, O., dispatch of Oct. 6 says: "The freight brakemen of the Mahoning Division, New York, Pennsylvania & Ohio, a few days ago demanded an increase of wages from \$1.75 to \$2 per day. They agreed to wait an answer until to-day in order to hear from the management of the Erie, which leases the road. Word was received from New York this morning refusing the demand and rejecting arbitration. The officers called a meeting of the brakemen, who refused to attend in a body, but sent a committee. Superintendent O'Brien submitted a proposition to pay as much as is paid on any line between Cleveland and Pittsburgh and make hours and conditions equally favorable. This proposition the committee reported to the brakemen, who declined it and struck at noon. They hope for support from the brakemen of other divisions, and expect if their demands are not complied with to involve the entire Erie system in a general strike. Col. Shaler says for the present the road will run no freight trains on the Mahoning Division, but he thinks the difficulty will soon be adjusted."

**Texas & Pacific.**—The time for depositing the income and land-grant bonds and the stock of the Texas & Pacific Co. under the Fleming-Wistar modified plan of reorganization expired Sept. 30. The committee state that they have practically the entire amount of the issue of all classes of bonds except the income and land-grant bonds, of which about \$1,500,000 have been received, and now control nearly the total amount of all classes of securities except the income and land-grant bonds. The issue of these outstanding is about \$8,000,000. Of this amount the income and land bonds reorganization committee has received bonds amounting to \$4,700,000, and claim that they have enough more promised to bring the amount above \$5,000,000.

A Philadelphia dispatch of Oct. 6 says: "It is stated officially here to-day that the following securities have been deposited under the Texas & Pacific reorganization plan: Consols, \$9,197,000; Rio Grande Division, \$12,292,000; New Orleans Pacific, \$6,289,000; terminals, \$2,774; land grants, \$1,716,000; stock, \$98,774 shares; scrip, \$164,230; New Orleans Pacific coupons, \$6,600; Rio Grande coupons, \$45,690; consolidated coupons, \$11,040; terminal coupons, \$60. The Committee, it is announced, will receive no more deposits of bonds except on payment of \$10 per bond, and no more stock except on payment of \$2 per share."

**Union Pacific.**—The statement for August and the eight months to Aug. 31 is as follows:

	1886.	1885.	Eight months 1886.	Eight months 1885.
Earnings.....	\$2,587,731	\$2,320,021	\$16,557,112	\$15,774,468
Expenses.....	1,496,017	1,299,083	11,341,301	10,481,534
Net earnings.....	\$1,091,714	\$1,020,938	\$5,215,811	\$5,292,934

For the eight months the gross earnings increased \$782,624, or 5.0 per cent., and the expenses \$859,767, or 8.2 per cent., the result being a decrease of \$77,943, or 1.5 per cent., in net earnings. Taxes are included in expenses; they amounted this year to \$84,065 for August and \$667,370 for the eight months.

The Grand Island & North Loop Branch is now completed and opened for business to Ord, Neb., 12 miles northward from the late terminus at North Loup and 61 miles from Grand Island.

It is reported that this company is having surveys made for several branch lines in Montana, to serve as feeders for the Utah & Northern line.

**Wichita & West Line.**—This company has been incorporated in Kansas to build a railroad from Wichita, Kan., to the west line of the state in Morton County, to pass through Sedgwick, Kingman, Harper, Barber, Comanche, Clarke, Meade, Seward, Stetson and Morton counties. The estimated length is 300 miles.

**Wilmington & Weldon.**—The Wilson cut-off is now completed from the main line at Wilson, N. C., southwest to the old town of Fayetteville on the Cape Fear River, a distance of 74 miles, and a regular train was put on the line Oct. 1. Work is to be continued from Fayetteville southwest to Florence, S. C., a distance of about 80 miles. The new line will shorten the distance between Weldon and Florence by about 60 miles, and also opens up a comparatively new country, most of which has been heretofore a considerable distance from a railroad.

The stations on the new line, with the distances from Wilson, are: Contentnea, 2; Kenley, 15; Jerome, 21; Selma, 25; Smithfield, 29; Four Oaks, 36; Benson's, 44; Lucknow, 50; Godwin, 58; Wade, 62; Fayetteville, 74 miles.

### ANNUAL REPORTS

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the Railroad Gazette:

Page.	Page.
Alabama Great Southern.....423	Louisville & Nashville.....593
Ala., N. O. Tex. & Pac. Junc.....423	Louisville, N. Albany & Chi.....355
Allegheny Valley.....588	Maine Central.....46
Alliance, Niles & Ash.....651	Manchester & Lawrence.....414
American, Preston & Lump.....492	Marquette, Houghton & Ont.....414
Ashland & Pittsburgh.....432	Massillon & Cleveland.....351
Atchison, Top. & Santa Fe.....292	Memphis & Charleston.....570
Atlanta & West Point.....554	Mexican Central.....486
Atlantic & N. Carolina.....485	Michigan Central.....23, 343
Atlantic & Pacific.....622	Michigan & Ohio.....414
B. & O. Employees' Relief Ass'n.....345	Min. Lake Shore & Western.....191
Baltimore & Philadelphia.....15	Minnesota & Northwestern.....518
Bay View, L. Trav. & Mackin.....632	Mississippi & Tennessee.....120
Boston & Lowell.....15	Missouri, Kansas & Texas.....357
Boston & Maine.....23	Missouri Pacific.....366
Boston & Providence.....15	Mobile & Girard.....492
Buffalo, N. Y. & Philadelphia.....16	Montpelier & Wells River.....493
Bur., Cedar Rapids & No.....622	Nashua & Lowell.....414
Cal., Vincennes & Chicago.....536	Nashville, Chattanooga & St. L.....534
Camden & Atlantic.....518	Natchez, Jackson & Col.....104
Canadian Gov't Railroads.....272	Nauvagus.....25
Canadian Pacific.....386	New Brighton & Westchester.....351
Carolina Central.....386	New Castle & Beaver Valley.....651
Central Pacific.....469	New Haven & Northampton.....308
Charlotte, Col. & Augusta.....155	New London Northern.....120
Chesapeake & Dela. Canal.....414	New Orleans & Northeast.....438
Chesapeake & Ohio.....240	N. Y., Chicago & St. L.....630
Cheshire.....104	N. Y. & New England.....16
Chicago & Alton.....156	N. Y., N. Haven & Hartford.....23
Chi., Burlington & Quincy.....392, 398	N. Y., Ontario & Western.....80
Chi. & Grand Trunk.....324	N. Y. Railroad Commission.....33
Chi., Milwaukee & St. P.....208, 224	N. Y., Susquehanna & W. Va.....189, 554
Chi. & North Western.....414, 532	N. Y. West Shore & Champlain.....354
Chi., Rock Island & Pac.....393, 423	Norfolk & Western.....104, 535
Chi., St. P., Minn. & Omaha.....256	Northern Central.....156
Chi., St. L. & Pittsburgh.....324	Northern Pacific.....570, 605
Chi. & Western Indiana.....458	Northwestern & Worcester.....622
Chi. & West Michigan.....595	Northeastern (South Carolina).....16
Chic. & Eastern.....638	Northern (New Hampshire).....414
Chic., Hamilton & Dayton.....485	Northwestern Ohio.....652
Chic., Ind. St. L. & Chi.....156	Ogdensburg & Lake Erie.....354
Chic. & Muskegon Valley.....394, 632	Oregon & Mississippi.....174
Chic., N. Orleans & Tex. Pacific.....140	Oregon & Transcontinental Co.....553
Chic., Richmond & Ft. Wayne.....652	Pacific Mail Steamship Co.....518
Chic. & Springfield.....208	Panama.....208
Chic., Wash. & Baltimore.....518	Pennsylvania Company.....651
Cleveland, Akron & Col.....630	Pennsylvania & New York.....221
Cleveland & Canton.....192	Pennsylvania Railroad.....175
Clev., Col., Chi. & Ind. & No.....208	Peoria, Decatur & Evansville.....192
Clev., Lorain & Wheeling.....588	Philadelphia & Reading.....48
Clev. & Pittsburgh.....652	Phila., Wil. & Baltimore.....307
Clev., Youngstown & Pitts.....652	Pittsburgh, Cin. & St. L.....594
Columbia & Greenville.....174	Pittsburgh, Ft. Wayne & Chi.....652
Col., Hocking V. & Tol.....192, 360	Pittsburgh & Lake Erie.....65
Concord.....367	Pittsburgh Junction.....35
Conn. & Passumpsic Rivers.....652	Pitts., Me. & Youngs Bay.....354
Connecticut River.....85	Pitts., Wheeling & Ky.....354
Consolidation Coal Co.....139	Portland & Ogdensburg.....120
Cumberland Valley.....307	Providence & Worcester.....120
Del. & Hudson Canal.....192	Richmond & Allegheny.....86
Del., Lacka. & Western.....104, 156	Richmond & Danville.....86
Denver & Rio Grande.....139, 536	Richmond, Fred. & Potomac.....86
Denver & Rio Gr. Western.....191	Rochester & Pittsburgh.....86
Des Moines & Fort Dodge.....323	Rome, Wat. & Ogdensburg.....85
Detroit, Lansing & No.....323	Rutland.....192
Detroit, Gd. Haven & Mil.....324, 518	St. L., Alton & Terre Haute.....581
Dublin & Wrightsville.....255	St. L., Iron Mt. & So.....307
East St. L. & Carondelet.....651	St. L. & San Francisco.....343, 350
East Tennessee, Va. & Ga.....652	St. L., Van. & Terre Haute.....292
Erie & Pittsburgh.....651	St. Paul & Duluth.....155
Fitchburg & Lowell.....68	St. P., Minn. & Manitoba.....594, 682
Flint & Pere Marquette.....150	Savannah, Fla. & Western.....354
Fort Wayne, Cin. & Ind. & No.....307	Scioto Valley.....557
Fremont, Elkhorn & Mo. V.....536	Shenandoah Valley.....570
Galveston, Houston & Hen.....307	Sioux City & Pacific.....535
Georgia Pacific.....272	South Carolina.....358
Grand Rapids & Indiana.....652	Southern Pacific (Cal.).....630
Grand Trunk.....394	Southern Pacific Co.....470
Gulf, Colorado & Santa Fe.....454	Son Ry. & Steamship Ass'n.....537
Hanover Junc., Han. & Gettys.....414	Stewartstown.....308
Houston.....192	Terre Haute & Indianapolis.....470
Houston & Texas Central.....272	Terre Haute & Logansport.....470
Huntingdon & Broad Top Mt.....120	Tol., Ann Arbor & N. M. Co.....621
Illinois Central.....174	Traverse City.....553
Indianapolis & St. Louis.....208	Troy & Greenfield.....223
Indianapolis & Vincennes.....652	Union Pacific.....230, 665
International & Gt. No.....367	Utica & Black River.....272
Iron.....408	Vicksburg & Meridian.....622
Jeff., Madison & Indianapolis.....458	Vicksburg, Shreveport & P.....423
Kans. City, Ft. Scott & Gulf.....139	Virginia Midland.....139
Kans. City, Springfield & Mem.....486	Western Maryland.....139
Kansas City Union Depot Co.....226	Western North Carolina.....192
Lake Shore & Mich. So. 33, 324, 341	West Jersey.....622
Lawrence.....651	Wilmington, Col. & Augusta.....104
Lehigh Coal & Navigation Co.....140	Wilmington & Northern.....662
Lehigh Valley.....68, 224	Wilmington & Weldon.....194
Leh. & W. Lakes Barre Coal Co.....139	Wisconsin Central.....553
Little Miami.....394	Worcester, Nashua & Rock.....196
Little Rock & Ft. Smith.....505	Wrightsville & Tennille.....231

### New York Central & Hudson River.

This company has issued a statement covering the fiscal year ending Sept. 30 last, the figures for the last quarter of the year being partly estimated. Comparisons are made with the full statement for the previous year.

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Earnings.....	\$30,500,000	\$24,429,441	I. \$6,070,559	24.8
Expenses.....	18,973,000	16,319,372	I. 2,653,628	16.3
Net earnings.....	\$11,527,000	\$8,110,069	I. \$3,416,931	42.1
Gross earn. p. mile.....	22,626	24,602	D. 1,976	8.0
Net.....	8,531	8,167	I. 364	4.7
Per cent. of exps.....	62.2	66.8	D. 4.6	....

The increase in gross earnings was not in proportion to the

increase in mileage, but the increase in net earnings was very large.

The result of the year is given as follows:

	1885-86.	1884-85.	Increase.	P. c.
Net earnings.....	\$11,527,000	\$8,110,069	\$3,416,931	42.1
First charges.....	7,250,000	6,933,726	316,274	22.2
Profit.....	\$4,277,000	\$2,176,343	\$2,100,657	96.5
Dividends paid.....	3,577,000	3,129,991	447,009	14.3

Surplus or deficit.....Sur. \$700,000 Def. \$953,648 \$1,653,648

The profit last year was equivalent to 4.79 per cent. on the stock, against 2.43 per cent. in 1884-85. The dividends paid last year were 4 per cent., against 3½ per cent. in the preceding year.

The operations of the leased West Shore road are included from Jan. 1, 1886, or for three-quarters of last year.

### Pittsburg, Cleveland & Toledo.

This company owns a road from New Castle Junction to Akron, O., 77.29 miles. It is leased to the Pittsburg & Western Co., and the lessee reports operations to the Railroad Commissioner of Ohio for the year ending June 30.

The equipment consists of 18 locomotives; 10 passenger, 512 freight and 18 service cars.

The earnings and income statement for the year are as follows:

Earnings (\$5.268 per mile).....	\$406,825
Expenses (67.4 per cent).....	274,362

Net earnings (\$1.715 per mile).....\$132,462

Rentals.....	\$41,456
Interest on bonds.....	144,000
Construction, equipment, etc.....	75,346
Deficit for the year.....	\$128,340

The company has \$3,000,000 capital stock and a funded debt consisting of \$2,400,000 first-mortgage 6 per cent. bonds.

### Wheeling & Lake Erie.

This road extends from Toledo, O., to Bowerstown, 175 miles, with a branch from Norwalk Junction to Huron, 12½ miles. During the last fiscal year it was operated by a receiver, from whose report to the Railroad Commissioner of Ohio for the year ending June 30, 1886, the figures below are taken.

The earnings for the year were as follows:

Earnings (\$2.913 per mile).....	\$546,152
Expenses (80 per cent).....	\$436,848

Net earnings (\$583 per mile).....\$109,304

The road carried during the year 239,223 passengers and 960,739 tons of freight.

The Receiver reports the disposition of net earnings as follows:

Net earnings.....	\$109,304
Rentals paid.....	\$8,373
New construction and equipment.....	77,179
Balance, surplus.....	\$23,752

The road was sold under foreclosure April 23 last; the sale was confirmed by the Court June 23, and on June 30 it was transferred to the purchasers, who have organized a new company under the same name.

### Oregon Improvement Company.

The report of this company for the year ending Nov. 30, 1885, has only just been made public. The earnings and expenses of the different departments were:

Department.	Earnings.	Expenses.	Balances.
Pacific Coast S. & Co.....	\$1,920,937	\$1,493,593	\$427,344
Pacific Coast Ry. Co.....	116,750	70,493	46,257
Cr. & Puget Sound R. R. Co.....	214,494	174,461	37,033
Coal Department.....	366,598	337,161	29,437
Heale street wharf.....	107,003	67,102	39,901
Steam colliers.....	149,459	136,444	12,515
Land and flume department.....	6,954	7,050	def. 96
Total.....	\$2,882,207	\$2,249,746	\$632,461
Total for 1884.....	3,557,153	2,575,105	982,047

Decrease.....\$674,915 \$325,358 \$349,556

Included in the net earnings for 1884 is the profit on land sold to the Oregon Railway & Navigation Co., which amounted to \$142,456. The large decrease was due to many causes, viz.: The failure of the California wheat crop, the general depression of business on the Pacific coast, the absorption of traffic by through rail lines, the re-adjustment of the steamship pools and the competition from the cheap imported foreign coals, that lowered selling rates, reduced the mine output and prevented the full occupation of the steam colliers.

The Pacific Coast Steamship Co. earned net \$427,404 for the year to Nov. 30, 1885, and \$511,941 for the previous year, a decrease of \$84,537. The Puget Sound and the Alaska routes show a satisfactory increase, while the Oregon and Northern and Southern California routes record a decrease of \$194,139 net, due to competition and diversion of business from San Francisco by new railroad lines and to other causes.

Accompanying the report for the year to Nov. 30, 1885, is a statement dated May 31, 1886, showing the stock and debt as follows:

Capital stock.....	\$7,000,000
Funded debt.....	5,000,000
Total floating debt.....	\$913,381
Less cash and cash assets.....	430,820
Total stock and debt.....	\$12,482,561

The yearly charges on this basis are: Interest on bonds, \$300,000; sinking fund, \$50,000; interest on floating debt, about \$40,000; total \$390,000.

Of the company's bonds, \$242,000 are held in the sinking fund, but the company pays 6 per cent. coupon interest on them, and this money is invested in more of the company's bonds for the sinking fund.

Negotiations for a settlement of accounts between this company and the Oregon & Transcontinental Co. have not yet been fully completed. This will require a payment by this company of about \$150,000, and will increase the debt to that extent.

### Nashville, Chattanooga & St. Louis.

This company operates a main line from Chattanooga, Tenn., through Nashville to Hickman, Ky., 331 miles; the Shelbyville Branch, 8; the Jasper Branch, 25; the Lebanon Branch, 30; the McMinnville Branch, 51; the Fayetteville Branch, 40; the Centerville Branch, 47; the Duck River road (leased), 48; a total of 580 miles. The report is for the year ending June 30.

The equipment includes 79 locomotives; 40 passenger, 3 mail and 16 baggage cars; 1,292 box, 58 stock, 10 coke and 560 flat cars; 1 pay, 1 pile-driver and 2 wrecking cars. The

company also owns 3-ft. gauge equipment used on the Centreville and Duck River branches as follows: 6 locomotives; 4 passenger and two baggage cars; 24 box, 4 stock and 84 flat cars.

The general account is as follows, condensed:

Stock.....	\$6,093,363
Funded debt.....	9,200,030
Floating debt.....	434,916
Interest liabilities.....	450,505
Profit and loss.....	1,571,013

Total.....\$18,324,836

Cost of road.....	\$17,094,876
Stocks and bonds.....	478,714
Real estate.....	67,961
Cash, supplies, etc.....	683,285
Total.....	17,694,876

The funded debt includes \$125,000 state indorsed bonds; \$500,000 bonds held by the United States; \$6,175,000 main line first-mortgage; \$1,000,000 main line second-mortgage; \$1,400,000 branch line first-mortgage bonds. Changes during the year were the issue of \$2,000 additional Duck River Valley bonds and \$200,000 Centreville Branch bonds, a total increase of \$202,000. The interest charge is \$605,550 (\$1.044 per mile) yearly.

The earnings for the year were as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Freight.....	\$1,429,468	\$1,425,878	D. 3,590	0.4
Passengers.....	604,820	640,737	D. 44,917	6.9
Mails.....	56,972	58,597	D. 1,625	2.8
Rents, etc.....	96,850	96,507	I. 343	0.4

Total.....	\$2,188,110	\$2,240,719	D. \$52,609	2.3
Expenses.....	1,322,858	1,384,002	I. 18,144	1.4

Net earnings.....\$865,252

Gross earn. per mile.....	3,773	\$936,717	D. \$71,463	7.6
Net.....	1,492	3,883	D. 100	2.3
Per cent. of exps.....	60.4	58.1	I. 2.3	....

The report says: "During the past fiscal year the general depression in the business of the country, together with the failure of the wheat crop in Tennessee and the demoralization in rates for several months, have curtailed to some extent the earnings of the line, while the damage to the track in April last by high water in the Tennessee River necessitated an increase in expenses."

The income account for the year was as follows:

Net earnings, as above.....	\$865,252
Interest and taxes.....	\$675,066
Improvements of property.....	45,221
Total.....	720,317

Net surplus.....\$144,935

Receipts from other sources.....	4,904
Sale of 202 branch line bonds.....	204,022
Total.....	\$353,861

Decrease in floating debt.....\$181,423

Increase in current resources.....71,888

Judgments on account of construction.....40,850

Change of gauge.....51,291

Branch lines.....8,400

Total.....353,861

The main line earned \$155,901 over expenses, interest and taxes; the Lebanon Branch, \$6,903; the McMinnville Branch, \$3,328. There was a loss of \$3,429 on the Centerville Branch, \$17,750 on the Duck River road, and of \$18 on the Fayetteville Branch.

The judgments noted above as paid were for damages done to the Nashville, Murfreesboro & Shelbyville turnpike by the original construction of the road in 1852.

The report says: "The gauge of 48½ miles of main track and 67 miles of side track has been changed from 5 ft. to 4 ft. 9 in. so as to allow an interchange of cars with the standard gauge roads, and it is thought this will be of great advantage, not only to the railroads, but to the business of the country, as it will obviate the delays, damages and expense of hoisting cars or transfer of freight from car to car. The Duck River road, 48 miles, and the Centerville Branch, 47 miles are of 3 ft. gauge."

Renovations and improvements included 16 miles of new 58-lb. steel rails and 198,701 new ties; 2,135 miles of track ballasted; 20,403 ft. new sidings built and extensive repairs made to bridges and trestles. The encroachments of the Mississippi at the terminus at Hickman, Ky., made it necessary to build there one mile of new road, about 3,50